September 29, 2014

Hawaii Department of Health
Environmental Management Division
Clean Air Branch
919 Ala Moana Blvd., Room 203
Honolulu, HI 96814
Attention: Mr. Darin Lum

cc: Chief (Attention: AIR-3)
Permits Office, Air Division
U.S. EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105

Subject: Application for an Initial Covered Source Permit
Kauai Terminal Upgrade Project – Phase I
Kauai Petroleum Co., Ltd. – Kauai Terminal
3185 Waapa Road, Lihue, Kauai

Dear Mr. Lum:

Mid Pac Petroleum, LLC, owner of Kauai Petroleum Co., Ltd., respectfully submits the enclosed application for an Initial Covered Source Permit. The Kauai Terminal currently operates under Noncovered Source Permit 0370-01-N. Due to changing market conditions, Mid Pac would like to upgrade the terminal to accommodate additional products and load at higher rates. The project consists of two (2) phases, the first of which is addressed in this application. We would appreciate any extra attention that the Department of Health (DOH) Clean Air Branch can give to processing this application as soon as possible.

Background

The Kauai Terminal currently receives both gasoline and jet fuel from marine barges, stores these products in four (4) above ground storage tanks, and bottom loads into outbound tank trucks at a single-bay truck loading rack. Permitted Tank Nos. 1, 4, and 9 store gasoline, while unpermitted Tank No. 2 stores jet fuel.

Current specifications in Noncovered Source Permit No. 0370-01-N:

1. Although Section A, Tables 1 and 2 both refer to diesel, Clean Air Branch exempted permitting the conversion to jet fuel service earlier this year on March 20, 2014; [1]
2. Tank No. 2 (jet fuel) is not listed in Section A, Table 1, but is footnoted as exempt from permitting;
3. Loading Arm No. 3 (jet fuel) is listed in Section A, Table 2, but the loading method has not yet been updated to reflect bottom loading instead of top loading;[2]

[1] Mid Pac received a written response letter from the Clean Air Branch dated March 20, 2014 confirming an air permit exemption for a previous project to change the existing Tank No. 2 and Loading Arm No. 3 from diesel service to jet fuel service, and increase jet fuel throughput from 143,000 bbl/yr to 350,000 bbl/yr. [DOH letter 14-171E CAB, File No. 0370].

[2] Mid Pac received a written response letter from the Clean Air Branch dated August 23, 2012 confirming an air permit exemption for a previous project to change the existing top loading diesel arm to a bottom loading diesel arm, and add a red dye injection system to the diesel loading arm [DOH letter 12-695E CAB, File No. 0307].

4. Maximum throughput of gasoline, listed in Section B, is limited to 235,800 barrels per rolling twelve-month period; and
5. Maximum throughput of jet fuel, although not listed in Section B, is limited to 350,000 barrels per year as indicated in Mid Pac's March 4, 2014 letter requesting exemption from permitting for a recent jet fuel conversion project. This throughput limit is enforceable per Standard Condition No. 5, which requires the facility to operate "in accordance with the application, and any information submitted as part of the application".

Proposed Modifications

Phase I of the project calls for 1) adding diesel, ethanol, and naphtha to the terminal's current slate of products, 2) increasing product loading rates and annual throughputs, and 3) increasing storage capacity by installing up to six (6) temporary aboveground storage tanks (ASTs). Mid Pac has planned these modifications with an understanding that the terminal will become a Covered Source as part of Phase I of the project. As demonstrated in this application, the project will not result in the terminal becoming a major source, but does trigger the requirement to install a vapor control device.

Proposed modifications associated with Phase I include the following:

1. Receive, store, and load three (3) additional products: diesel, denatured ethanol, and naphtha.
2. Change product service for Tank Nos. 1 and 9 from gasoline to gasoline/naphtha: In order to gain operational flexibility, Mid Pac would like to store these products interchangeably and therefore combine any related limits for gasoline and naphtha. Material properties for gasoline and naphtha are similar enough to merit permitting in this manner.
3. Change product service for Tank No. 4 from gasoline to gasoline/naphtha/diesel: In addition to statements above related to interchangeable storage of gasoline and naphtha, Mid Pac would like to resume diesel service at the terminal and is seeking operational flexibility to store diesel in this tank, particularly during Phase I of the project.
4. Install between four and six (4-6) temporary aboveground storage tanks (ASTs) for ethanol/diesel storage: Mid Pac would like to add this storage capacity in support of its objectives to increase loading rates and perform inline blending of ethanol to comply with industry standards. Flexibility to store diesel in these tanks during Phase I of the project is also desired. Each AST will be of steel construction and have an internal floating roof with a mechanical-shoe rim seal. They are considered temporary tanks because new construction of a larger permanent ethanol storage tank is being considered later as part of Phase II.
5. Install a concrete pad for the temporary ASTs, which are pre-manufactured and portable by design. The project calls for modifying site containment by rerouting an existing concrete block wall around the temporary ASTs. This will add secondary impervious containment capacity.
6. Install new distribution piping to receive and load products: This will include pumps, pipes, and valving to connect the temporary ASTs to the existing dock and truck loading rack.

7. Install an elevated flare to serve as a control device for gasoline, naphtha, and ethanol vapors generated at the truck loading rack. The flare will be between 13 and 32 feet in total height, have of a vapor burn capacity of approximately 10,000 cubic feet per hour, require no steam assist, and burn propane as pilot gas.
8. Install a portable diesel generator, up to 300 bhp in size, to temporarily supplement electrical power needs during Phase I of the project. The generator will include an EPA-designated Tier 4 engine and burn ultra low sulfur diesel fuel. This generator will be replaced with a permanent power supply during Phase II of the project, however a like or smaller generator may be retained indefinitely beyond Phases I & II of the project to serve as an emergency backup power supply.
9. Increase the truck rack loading rate for all products from 420 GPM to approximately 600 GPM by installing new, more efficient pumps and safety-related equipment such as additive injection equipment, new metering and control valves, and computerized automation systems. This equipment will also allow the terminal to begin inline blending of ethanol into gasoline. Between one and three (1-3) additional loading arm(s) will be added as part of these modifications to the truck loading rack.
10. Increase truck loading rack annual throughput limits: New limits proposed in this permit application were determined based on projected changes in market demand for these products along with Mid Pac's preference to avoid becoming a major source at the present time. See Table 1.

Permitting Evaluation

Additional content is included on Form S-2 and Form C-1 in this application documenting applicability and non-applicability to certain regulations.

Potential-to-emit (PTE) emissions for criteria pollutants and hazardous air pollutant (HAPs) are also included in this application in support of completing regulatory determinations.

Construction and modification activities outlined in this application are specific to Phase I of the terminal upgrade project. Additional construction and modification activities are being considered as part of Phase II of the project, and may trigger other requirements and applicable regulations. It is our understanding that the DOH Clean Air Branch will consider Phase II of our upgrade project as a separate permitting effort when details are presented at a later date.

Table 1
Kauai Terminal
Upgrade Project – Phase I
Modification Summary

Description	Pre-Project	Post-Project (Phase I)
Storage Tanks / Product Services		
Tank No. 1	Gasoline	Gasoline / Naphtha
Tank No. 2	Jet Fuel	Jet Fuel
Tank No. 4	Gasoline	Gasoline / Naphtha / Diesel
Tank No. 9	Gasoline	Gasoline / Naphtha
Temporary ASTs (4-6)	N/A	Denatured Ethanol / Diesel
Construction		
Temporary ASTs (4-6)	N/A	Internal Floating Roof
Vapor Control Device	N/A	Elevated Flare
Diesel Generator	N/A	≤ 300 bhp, Tier 4 Engine
Annual Throughput Limits		
Gasoline	235,800 bbl/yr	N/A
Gasoline / Naphtha	N/A	949,000 bbl/yr
Jet Fuel	350,000 bbl/yr	793,000 bbl/yr
Diesel	N/A	219,000 bbl/yr
Ethanol	N/A	94,900 bbl/yr
Truck Loading Rack		
Rack Pumping Rate	420 GPM	600 GPM
Equipment Upgrades	• Outdated equipment • No inline blending • 3 loading arms	• New metering • Inline blending • Additive injection • Automation systems • 4 to 6 loading arms

Supplemental Materials

All necessary application materials are included in this permit application package.

- Attachment A : Form S-1
- Attachment B : Form S-2
- Attachment C : Form C-1
- Attachment D : Form C-2
- Attachment E : Facility Plot Plan with Proposed Phase I Modifications
- Attachment F : Air Quality Assessment
- Attachment G : Potential-to-Emit Emission Calculations
- Attachment H : TANKS 4.09d Model Output

If you have any questions or need additional information, please contact Russell Whang at (808) 535-5941 or by email at Russell.Whang@MidPacPetroleum.com.

Sincerely,

Sayle Hirashima
CFO/VP
Mid Pac Petroleum, LLC
Kauai Petroleum Co., Ltd.

cc: Russell Whang
David Harjo

Attachment A

Form S-1
Standard Air Pollution Control Permit Application Form

Kauai Terminal Upgrade Project – Phase I
Application for an Initial Covered Source Permit

Mid Pac Petroleum, LLC
Kauai Petroleum Co., Ltd.
Petroleum Bulk Loading Terminal
Permit No. 0370-01-N

Mid Pac PETROLEUM

File/Application No.: _____

S-1: Standard Air Pollution Control Permit Application Form

(Covered Source Permit and Noncovered Source Permit)

State of Hawaii
Department of Health
Environmental Management Division
Clean Air Branch
P.O. Box 3378 • Honolulu, HI 96801-3378 • Phone: (808) 586-4200

1. Company Name: Mid Pac Petroleum, LLC

2. Facility Name (if different from the Company): Kauai Petroleum Co., Ltd. Petroleum Bulk Loading Terminal

3. Mailing Address: 1100 Alakea St., 8th Floor

   City: Honolulu State: HI Zip Code: 96813

   Phone Number: (808) 535-5941

4. Name of Owner/Owner's Agent: Russell Whang

   Title: Manager, Supply & Commercial Sales Phone: (808) 535-5941

   Mailing Address: 1100 Alakea St., 8th Floor

   City: Honolulu State: HI Zip Code: 96813-2833

5. Plant Site Manager/Other Contact: Chris Tamura

   Title: Kauai Terminal Supervisor Phone: (808) 635-6362

   Mailing Address: 3185 Waapa Road

   City: Lihue State: HI Zip Code: 96766

6. Permit Application Basis: (Check all applicable categories.)

   - [ ] Initial Permit for a New Source
   - [X] Initial Permit for an Existing Source
   - [ ] Renewal of Existing Permit
   - [ ] General Permit
   - [ ] Temporary Source
   - [ ] Transfer of Permit
   - [X] Modification to a Covered Source: ➔ Is Modification? [X] Significant [ ] Minor [ ] Uncertain
   - [ ] Modification to a Noncovered Source

7. If renewal or modification, include existing permit number: 0370-01-N

8. Does the Proposed Source require a County Special Management Area Permit? [ ] Yes [X] No

9. Type of Source (Check One): [X] Covered Source [ ] Covered and PSD Source [ ] Noncovered Source [ ] Uncertain

10. Standard Industrial Classification Code (SICC), if known: NAICS Code 424710 (formerly SIC Code 5171)

11. Proposed Equipment/Plant Location (e.g. street address): 3185 Waapa Road

City: Lihue State: HI Zip Code: 96766

UTM Coordinates (meters): East: 463250.6 North: 2427961.4

UTM Zone: 4 UTM Horizontal Datum: ☐ Old Hawaiian ☐ NAD-27 ☒ NAD-83

12. General Nature of Business: Petroleum products bulk loading operation

13. Date of Planned Commencement of Construction or Modification: ASAP

14. Is ***any*** of the equipment to be leased to another individual or entity? ☐ Yes ☒ No

15. Type of Organization: ☐ Corporation ☐ Individual Owner ☐ Partnership

☐ Government Agency (Government Facility Code: _____)

☒ Other: Limited Liability Company

Any applicant for a permit who fails to submit any relevant facts or who has submitted incorrect information in any permit application shall, upon becoming aware of such failure or incorrect submittal, promptly submit such supplementary facts or corrected information. In addition, an applicant shall provide additional information as necessary to address any requirements that become applicable to the source after the date it filed a complete application, but prior to the issuance of the noncovered source permit or release of a draft covered source permit. (HAR §11-60.1-64 & 11-60.1-84)

RESPONSIBLE OFFICIAL (as defined in HAR §11-60.1-1)

Name (Last): Hirashima (First): Sayle (MI): _____

Title: CFO/VP Phone: (808) 535-5990

Mailing Address: 1100 Alakea Street, 8th Floor

City: Honolulu State: HI Zip Code: 96813-2833

Certification by Responsible Official (pursuant to HAR §11-60.1-4)

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Department of Health as public record. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with the Hawaii Administrative Rules (HAR), Title 11, Chapter 60.1, Air Pollution Control, and any permit issued thereof.

NAME (Print/Type): Sayle Hirashima

(Signature): [signature] Date: 9/29/14

FOR AGENCY USE ONLY:

File/Application No.: _____

Island: _____

Date Received: _____

Submit the following documents as part of your application:

A. The ***Emissions Units Table***, filled in as completely as possible. Use separate sheets of paper as needed. General instructions include the following:

1. Identify each **emission point** with a unique number for this plant site, consistent with emission point identification used on the location drawing and previous permits; if known, provide the SICC number. Emission points shall be identified and described in sufficient detail to establish the basis for **fees** and applicability of requirement of HAR, Chapter 11-60.1. Examples of emission point names are: heater, vent, boiler, tank, baghouse, fugitive, etc. Abbreviations may be used.
   a. For each emission point use as many lines as necessary to list regulated and hazardous air pollutant data. For hazardous air pollutants, also list the Chemical Abstracts Service number (CAS#).
   b. Indicate the emission points that discharge together for any length of time.
   c. The **Equipment Date** is the date of equipment construction, reconstruction, or modification. Provide supporting documentation.

2. State the **maximum emission rates** in terms sufficient to establish compliance with the applicable requirements and standard reference test methods. Provide all supporting emission calculations and assumptions:
   a. Include all regulated and hazardous air pollutants and air pollutants for which the source is major, as defined in HAR §11-60.1-1. Examples of regulated pollutant names are: Carbon Monoxide (CO), Nitrogen Oxides (NO_X), Sulfur Dioxide (SO_2), Volatile Organic Compounds (VOC), particulate matter (PM), and particulate less than 10 microns (PM_{10}). Abbreviations may be used.
   b. Include fugitive emissions.
   c. **Pounds per hour (#/HR)** is the maximum potential emission rate expected by applicant.
   d. **Tons per year** is the annual maximum potential emissions expected by the applicant, taking into account the typical operating schedule.

3. Describe ***Stack Source Parameters***:
   a. **Stack Height** is the height above the ground.
   b. **Direction** refers to the exit direction of stack emissions: up, down or horizontal.
   c. **Flow Rate** is the actual, not the calculated, flow rate.

4. Provide any additional information, if applicable, as follows:
   a. If combinations of different fuels are used that cause any of the stack source parameters to differ, complete one row for each possible set of stack parameters and identify each fuel in the **Equipment Description**.
   b. For a rectangular stack, indicate the length and width.
   c. Provide any information on stack parameters or any stack height limitations developed pursuant to Section 123 of the Clean Air Act.

B. A **process flow diagram** identifying all equipment used in the process, including the following:
   1. Identify and describe each emission point.
   2. Identify the locations of safety valves, bypasses, and other such devices which when activated may release air pollutants to the atmosphere.

C. A **facility location map**, drawn to a reasonable scale and showing the following:
   1. The property involved and all structures on it. Identify property/fence lines plainly.
   2. Layout of the facility.
   3. Location and identification of the proposed emissions unit on the property.
   4. Location of the property and equipment with respect to streets and all adjacent property. Show the location of all structures within 100 meters of the applicant's emissions unit. Provide the building dimensions (height, length, and width) of all structures that have heights greater than 40% of the stack height of the emissions unit.

D. Provide a description of any proposed modifications or permit revisions. Include any justification or supporting information for the proposed modifications or permit revisions.

Company Name: Kauai Petroleum Co., Ltd. Petroleum Bulk Loading Terminal File No.: _____

Location: 3185 Waapa Road, Lihue, HI 96766

(Make as many copies of this page as necessary) Page 1 of 2

EMISSIONS UNITS TABLE

Review of applications and issuance of permits will be expedited by supplying all necessary information on this table.

AIR POLLUTANT DATA: EMISSION POINTS				AIR POLLUTANT	AIR POLLUTANT EMISSION RATE PTE		UTM Zone: 4 Horizontal Datum [a]: NAD-83 Coordinates (mtrs)		STACK SOURCE PARAMETERS						
Stack No.	Unit No.	Equipment Name/ Description & SICC number	Equipment Date	Regulated/ Hazardous Air Pollutant Name & CAS#	#/ HR	Tons/ YR			Stack Height (mtrs)	Direction (u/d/h) [b]	Inside Diameter (mtrs)	Velocity (m/s)	Flow Rate (m^3/s)	Temp. (^oK)	Capped (Y/N)
		Petroleum Product Loading Rack - 4 to 6 Loading Arms - Bottom Loading	1950's /2004 /2014		See Attachment G-1		East North	463250.6 2427961.4	N/A	N/A	N/A	N/A	N/A	Ambient	
		Storage Tank 1 - Internal floating roof - 7,300 bbl capacity - 35.9' D x 39.9' shell H - Gasoline / Naphtha	1966		See Attachment G-1		East North	463250.6 2427961.4	12	u	11	0	0	Ambient	
		Storage Tank 2 - Internal floating roof - 7,200 bbl nominal capacity - 40' D x 32' shell H - Jet Fuel	1989	Note 1	See Attachment G-1		East North	463250.6 2427961.4	10	u	12	0	0	Ambient	
		Storage Tank 4 - Internal floating roof - 7,500 bbl nominal capacity - 38' D x 37.5' shell H - Gasoline/ Naphtha / Diesel	1957		See Attachment G-1		East North	463250.6 2427961.4	11	u	12	0	0	Ambient	
		Storage Tank 9 - Internal floating roof - 3,100 bbl nominal capacity - 26' D x 32' shell H - Gasoline / Naphtha	1957		See Attachment G-1		East North	463250.6 2427961.4	10	u	8	0	0	Ambient	
		AST 1 - Internal floating roof - 645 bbl nominal capacity - 12' D x 32' shell H - Ethanol/ Diesel	2014	Note 2	See Attachment G-1		East North	463250.6 2427961.4	10	u	4	0	0	Ambient	

[a] Specify UTM Horizontal Datum as Old Hawaiian, NAD-83, or NAD-27

[b] Specify the direction of the stack exhaust as u = upward, d = downward, or h = horizontal

Note 1: Tank 2 is exempt from permitting per §11-60.1-82(f)(7) because the potential VOC emissions from this source are less than 2.0 tpy, based on jet fuel storage.

Note 2: The four to six (4-6) temporary ASTs are exempt from permitting §11-60.1-82(f)(1) & §11-60.1-82(f)(7) because the capacities of these storage tanks are less than 40,000 gallons and emissions are below 1.0 tpy based on ethanol storage.

Company Name: Kauai Petroleum Co., Ltd. Petroleum Bulk Loading Terminal

File No.: _____

Location: 3185 Waapa Road, Lihue, HI 96766

(Make as many copies of this page as necessary)

EMISSIONS UNITS TABLE

Review of applications and issuance of permits will be expedited by supplying all necessary information on this table.

AIR POLLUTANT DATA: EMISSION POINTS				AIR POLLUTANT	AIR POLLUTANT EMISSION RATE PTE		UTM Zone: 4 Horizontal Datum [a]: NAD-83 Coordinates (mtrs)		STACK SOURCE PARAMETERS						
Stack No.	Unit No.	Equipment Name/ Description & SICC number	Equipment Date	Regulated/ Hazardous Air Pollutant Name & CAS#	#/ HR	Tons/ YR			Stack Height (mtrs)	Direction (u/d/h) [b]	Inside Diameter (mtrs)	Velocity (m/s)	Flow Rate (m^3/s)	Temp. (^{o} K)	Capped (Y/N)
		AST 2 - Internal floating roof - 645 bbl nominal capacity - 12' D x 32' shell H - Ethanol/ Diesel	2014	Note 2	See Attachment G-1		East North	463250.6 2427961.4	10	u	4	0	0	Ambient	
		AST 3 - Internal floating roof - 645 bbl nominal capacity - 12' D x 32' shell H - Ethanol/ Diesel	2014	Note 2	See Attachment G-1		East North	463250.6 2427961.4	10	u	4	0	0	Ambient	
		AST 4 - Internal floating roof - 645 bbl nominal capacity - 12' D x 32' shell H - Ethanol/ Diesel	2014	Note 2	See Attachment G-1		East North	463250.6 2427961.4	10	u	4	0	0	Ambient	
		AST 5 - Internal floating roof - 645 bbl nominal capacity - 12' D x 32' shell H - Ethanol/ Diesel	2014	Note 2	See Attachment G-1		East North	463250.6 2427961.4	10	u	4	0	0	Ambient	
		AST 6 - Internal floating roof - 645 bbl nominal capacity - 12' D x 32' shell H - Ethanol/ Diesel	2014	Note 2	See Attachment G-1		East	463250.6	10	u	4	0	0	Ambient	
		Diesel Generator - Support loading rack - Ultra Low Sulfur Diesel -≤300 bhp -EPA Tier 4	2014		See Attachment G-1		East North	463250.6 2427961.4	3	u	0.1	114	0.5	644	N

[a] Specify UTM Horizontal Datum as Old Hawaiian, NAD-83, or NAD-27

[b] Specify the direction of the stack exhaust as u = upward, d = downward, or h = horizontal

Note 1: Tank 2 is exempt from permitting per §11-60.1-82(f)(7) because the potential VOC emissions from this source are less than 2.0 tpy, based on jet fuel storage.

Note 2: The four to six (4-6) temporary ASTs are exempt from permitting §11-60.1-82(f)(1) & §11-60.1-82(f)(7) because the capacities of these storage tanks are less than 40,000 gallons and emissions are below 1.0 tpy based on ethanol storage.

Company Name: Kauai Petroleum Co., Ltd. Petroleum Bulk Loading Terminal

File No.: _____

Location: 3185 Waapa Road, Lihue, HI 96766

(Make as many copies of this page as necessary)

EMISSIONS UNITS TABLE

AIR POLLUTANT DATA: EMISSION POINTS				AIR POLLUTANT	AIR POLLUTANT EMISSION RATE PTE		UTM Zone: 4 Horizontal Datum [a]: NAD-83		STACK SOURCE PARAMETERS						
Stack No.	Unit No.	Equipment Name/ Description & SICC number	Equipment Date	Regulated/ Hazardous Air Pollutant Name & CAS#	#/ HR	Tons/ YR	Coordinates (mtrs)		Stack Height (mtrs)	Direction (u/d/h) [b]	Inside Diameter (mtrs)	Velocity (m/s)	Flow Rate (m^3/s)	Temp. (^oK)	Capped (Y/N)
		Flare -Loading rack control device -Gasoline/ Naphtha/ Ethanol	2014	Note 2	See Attachment G-1		East	463250.6	4-10	u	11	20	250	1273	N

[a] Specify UTM Horizontal Datum as Old Hawaiian, NAD-83, or NAD-27

[b] Specify the direction of the stack exhaust as u = upward, d = downward, or h = horizontal

Note 1: Tank 2 is exempt from permitting per §11-60.1-82(f)(7) because the potential VOC emissions from this source are less than 2.0 tpy, based on jet fuel storage.

Note 2: The four to six (4-6) temporary ASTs are exempt from permitting §11-60.1-82(f)(1) & §11-60.1-82(f)(7) because the capacities of these storage tanks are less than 40,000 gallons and emissions are below 1.0 tpy based on ethanol storage.

Attachment B

Form S-2
Application for an Initial Covered Source Permit

Kauai Terminal Upgrade Project – Phase I
Application for an Initial Covered Source Permit

Mid Pac Petroleum, LLC
Kauai Petroleum Co., Ltd.
Petroleum Bulk Loading Terminal
Permit No. 0370-01-N

Mid Pac PETROLEUM

File No.: _____

S-2: Application for an Initial Covered Source Permit

In providing the required information, reference the corresponding letters and numbers listed below.

Provide a minimum of **two (2)** sets (1 original and 1 copy) of all application materials to the Hawaii Department of Health. Also, mail **one (1)** set directly to EPA at the following address:

Chief (Attention: AIR-3)
Permits Office, Air Division
U.S. Environmental Protection Agency
Region 9
75 Hawthorne Street
San Francisco, CA 94105

I. In accordance with Hawaii Administrative Rules (HAR) §11-60.1-83, the following information is required:

A. Equipment Specifications:

1. Maximum design capacity. [Table IA-1]
2. Fuel type. [Table IA-1]
3. Fuel use. [Table IA-1]
4. Production capacity. [Table IB-1]
5. Production rates. [Table IB-1]
6. Raw materials. [Table IA-1]
7. Provide any manufacturer's literature. N/A

Table A-1 below summarizes the specifications for key facility equipment after the proposed project is implemented. Throughput limits are provided in the project scope table presented in Section I.B.

Table A-1 – Equipment Specifications (Post Project)

Equipment	Description	Capacity	Fuel / Material
Truck Loading Rack			
Tank Truck Loading Rack	Tank truck loading rack with 4 to 6 bottom loading arms	600 GPM	• Gasoline and Ethanol (Finished Gasoline) • Naphtha • Jet Fuel • Diesel
Diesel Generator	Electric generator powered by diesel IC engine	• ≤ 300 bhp	• Diesel
Flare	Loading rack vapor combustion device	• ≥ 98% destruction efficiency	• Loading vapors from Gasoline, Ethanol, and Naphtha loading • Propane pilot gas

Equipment	Description	Capacity	Fuel / Material
Petroleum Storage Tanks			
Tank No. 1	Internal floating roof storage tank	7,300 bbl	• Gasoline • Naphtha
Tank No. 2	Internal floating roof storage tank	7,200 bbl	• Jet Fuel
Tank No. 4	Internal floating roof storage tank	7,500 bbl	• Gasoline • Naphtha • Diesel
Tank No. 9	Internal floating roof storage tank	3,100 bbl	• Gasoline • Naphtha
AST 1	Internal floating roof storage tank	645 bbl	• Denatured Ethanol • Diesel
AST 2	Internal floating roof storage tank	645 bbl	• Denatured Ethanol • Diesel
AST 3	Internal floating roof storage tank	645 bbl	• Denatured Ethanol • Diesel
AST 4	Internal floating roof storage tank	645 bbl	• Denatured Ethanol • Diesel
AST 5	Internal floating roof storage tank	645 bbl	• Denatured Ethanol • Diesel
AST 6	Internal floating roof storage tank	645 bbl	• Denatured Ethanol • Diesel

B. Provide detailed descriptions of all processes and products defined by Standard Industrial Classification Code (SICC). Also, provide any reasonably anticipated alternative operating scenarios, associated processes, and products, by SICC.

The Mid Pac Kauai Terminal is a bulk petroleum terminal that currently receives both gasoline and jet fuel from marine barges, stores these products in four (4) above ground storage tanks, and bottom loads into outbound tank trucks at a single-bay truck loading rack. Permitted Tank Nos. 1, 4, and 9 store gasoline and unpermitted Tank No. 2 stores jet fuel.

Mid Pac, in this application, proposes to: 1) add the ability to store and inline blend ethanol to produce and load finished gasoline, 2) additionally process diesel and naphtha, and 3) increase annual throughput limits at the loading rack. In addition, Mid Pac will install a flare to control vapors from gasoline, ethanol, and naphtha loading to order to comply with NSPS Subpart XX. The truck loading rack will become subject to Subpart XX because the changes at the rack constitute a modification as defined in NSPS Subpart A. Thus, this submittal is also an application to convert Mid Pac from a noncovered source to a covered source, triggered by Subpart XX applicability. Mid Pac, in this application, is not applying for any alternative operating scenarios.

The proposed project changes are described in the cover letter. Table 1 on page 4 of the cover letter, excerpted below, also summarizes the proposed changes.

Table 1 excerpted from cover letter summarizing proposed changes

Description	Pre-Project	Post-Project (Phase I)
Storage Tanks / Product Services		
Tank No. 1	Gasoline	Gasoline / Naphtha
Tank No. 2	Jet Fuel	Jet Fuel
Tank No. 4	Gasoline	Gasoline / Naphtha / Diesel
Tank No. 9	Gasoline	Gasoline / Naphtha
Temporary ASTs (4-6)	N/A	Denatured Ethanol / Diesel
Construction		
Temporary ASTs (4-6)	N/A	Internal Floating Roof
Vapor Control Device	N/A	Elevated Flare
Diesel Generator	N/A	≤ 300 bhp, Tier 4 Engine
Annual Throughput Limits		
Gasoline	235,800 bbl/yr	N/A
Gasoline / Naphtha	N/A	949,000 bbl/yr
Jet Fuel	350,000 bbl/yr	793,000 bbl/yr
Diesel	N/A	219,000 bbl/yr
Ethanol	N/A	94,900 bbl/yr
Truck Loading Rack		
Rack Pumping Rate	420 GPM	600 GPM
Equipment Upgrades	• Outdated equipment • No inline blending • 3 loading arms	• New metering • Inline blending • Additive injection • Automation systems • 4 to 6 loading arms

1. Identify and describe in detail all air pollution control equipment and compliance monitoring devices or activities planned by the owner or operator, and to the extent of available information, an estimate of emissions before and after controls. Provide all calculations and assumptions.

The Kauai Terminal proposes to install an elevated flare to control emissions during the loading of gasoline, ethanol, and naphtha. The flare will not be used during the loading of diesel and jet because: 1) it is being installed to meet NSPS Subpart XX, which regulates gasoline loading, and 2) the uncontrolled VOC emissions associated with diesel and jet loading are small. The estimated maximum usage for the flare is 8 hours per day. The flare will have a minimum destruction efficiency of 98%.

The tables below summarize the potential-to-emit (PTE) emissions before and after the project. The pre-project PTE emissions are based on the Clean Air Branch's NonCovered Source Permit Review Summary for Kauai Petroleum Company's permit renewal application dated March 30, 2010 (Application File No.: 0370-03) . The post-project PTE emissions reflect the project changes in whole, and consider the VOC destruction efficiency of the flare, the new criteria pollutants introduced by combustion in the flare and diesel generator, and greenhouse gas (GHG) pollutants which became subject to permitting requirements in 2011. The detailed emissions calculations for VOCs, other criteria pollutants, HAPs, and GHGs are provided in Attachment G.

Table B1-1 – Pre-Project and Post-Project PTE VOC Emissions

Equipment	Pre-Project VOC PTE (tpy)	Post-Project VOC PTE (tpy)
Truck Loading Rack		
Tank Truck Loading	32.6	2.3
Barge Loading	27.2	0.0
Flare	N/A	3.2
Diesel Generator	N/A	0.2
Petroleum Storage Tanks		
Tank No. 1	See Storage Tanks Total	3.2
Tank No. 2	See Storage Tanks Total	0.1
Tank No. 4	See Storage Tanks Total	1.7
Tank No. 9	See Storage Tanks Total	2.5
Temporary ASTs (6)	N/A	0.6
Storage Tanks Total	10.1	8.0
Fugitive Components		
Fugitive Components	0.03	0.18
Total Facility		
Total Facility PTE, tons per year	**69.9**	**13.9**

In Table 1B-1 above, please note that barge loading VOC emissions are not indicated in the post-project scenario. The Kauai Terminal does not anticipate the need to conduct marine loading operations at this time. If, under rare circumstances in the future, an occasion arises to conduct marine loading, Mid Pac will explore potential avenues for approval with DOH such as restoring this activity in its permit or obtaining a variance.

Table B1-2 – Pre-Project and Post-Project PTE NOx, SOx, CO, and PM Emissions

Equipment	Pre-Project PTE (tpy)	Post-Project PTE (tpy)
NOx		
Flare, NOx	N/A	0.6
Diesel Generator, NOx	N/A	0.5
Total Facility PTE, tons per year	**0**	**1.0**
SOx		
Flare, SOx	N/A	0.0
Diesel Generator, SOx	N/A	0.0
Total Facility PTE, tons per year	**0**	**0.0**
CO		
Flare, CO	N/A	0.8
Diesel Generator, CO	N/A	4.1
Total Facility PTE, tons per year	**0**	**4.9**
PM		
Flare, PM	N/A	0.1
Diesel Generator, PM	N/A	0.0
Total Facility PTE, tons per year	**0**	**0.1**

Table B1-3 – Pre-Project and Post-Project PTE HAP Emissions

Equipment	Pre-Project HAP PTE (tpy)	Post-Project HAP PTE (tpy)
Benzene	0.23	0.1
Ethylbenzene	0.07	0.0
n-Hexane	0.73	1.0
Toluene	0.28	0.1
Xylenes (Mixed Isomers)	0.11	0.1
Methanol	0.00	0.0
Naphthalene	0.00	0.0
Total Facility PTE, tons per year	**1.43**	**1.4**

Table B1-4 – Pre-Project and Post-Project PTE GHG Emissions

Equipment	Pre-Project GHG PTE (tpy)	Post-Project GHG PTE (tpy)
CO2		
Flare Pilot Gas (Propane)	N/A	11
Flare Loading Rack Vapors (Gasoline)	N/A	634
Diesel Generator	N/A	440
Total Facility PTE, tons per year	N/A	**1,085**
CH4		
Flare Pilot Gas (Propane)	N/A	0.0
Flare Loading Rack Vapors (Gasoline)	N/A	0.0
Diesel Generator	N/A	0.0
Total Facility PTE, tons per year	N/A	**0.0**
N2O		
Flare Pilot Gas (Propane)	N/A	0.0
Flare Loading Rack Vapors (Gasoline)	N/A	0.1
Diesel Generator	N/A	0.0
Total Facility PTE, tons per year	N/A	**0.1**
CO2e		
Flare Pilot Gas (Propane)	N/A	11
Flare Loading Rack Vapors (Gasoline)	N/A	651
Diesel Generator	N/A	452
Total Facility PTE, tons per year	N/A	**1,114**

2. List all **insignificant** activities in accordance with HAR §11-60.1-82.

Table B2-1 lists all insignificant activities that are exempt from permitting.

Table B2-1 – Exempt Insignificant Activities

Equipment	Reason for Exemption	DOH Regulation Reference
Tank No. 2	HAP emissions are less than 500 lbs/yr. VOC emissions are less than 2.0 tpy.	§11-60.1-82(f)(7)
Temporary ASTs (4 to 6)	VOC emissions less than 1.0 tpy based on ethanol fuel storage. Tank capacities are less than 40,000 gallons.	§11-60.1-82(f)(1) & §11-60.1-82(f)(7)

C. Maximum Operating Schedule (to the extent needed to determine or regulate emissions):

1. Total hours per day, per week, and/or per month.

   The Kauai Terminal operates 24 hours a day, 7 days a week, 365 days a year. The loading rack flare is expected to operate 8 hours a day. The diesel generator is expected to operate 13 hours a day.

2. Total hours per year.

Facility:	8760 hours/year
Flare:	2920 hours/year
Diesel Generator:	4745 hours/year

3. If operation is seasonal or irregular, describe. N/A

D. Cite and describe all **applicable requirements** as defined in HAR §11-60.1-81, including the following:

1. Description of or reference to any applicable test methods for determining compliance with each applicable requirement.

2. Explanation of all proposed exemptions from any applicable requirements.

Table D-1 below provides a full applicability evaluation for all relevant DOH and federal rules and regulations and summarizes both applicable and non-applicable requirements.

Table D-1 – Regulation Applicability Evaluation

Regulation	Applicability Evaluation
Synthetic Minor Stationary Source *[40 CFR 52.21; 40 CFR 70.2]*	Mid Pac is proposing, as part of this permit application, to establish federally enforceable throughput limits to limit the facility's potential-to-emit VOC emissions below 100 tons per year. As such, Mid Pac will remain a synthetic minor stationary source and not become a major stationary source.
HAP Area Source *[40 CFR 63.2]*	The proposed project will not cause Mid Pac to change from a hazardous air pollutant (HAP) area source to a HAP major source. Mid Pac will continue to emit, on a potential-to-emit basis, less than 10 tons per year of any single HAP or less than 25 tons per year of any combination of HAPs.
Non-Major Covered Source *[HAR 11-60.1 Subchapter 5]*	Mid Pac will change from a noncovered source to a non-major covered source as a result of the proposed project. Currently, Mid Pac is a noncovered source because the following determinations apply: 1. Mid Pac is not a major stationary source; 2. Mid Pac is not subject to a NSPS regulation that, by itself,

Table D-1 – Regulation Applicability Evaluation

Regulation	Applicability Evaluation
	triggers Part 70 or Title V permitting; 3. Mid Pac is not subject to a MACT regulation that, by itself, triggers Part 70 or Title V permitting; and 4. Mid Pac is not subject to PSD. After the proposed project, Mid Pac will become a non-major covered source because its PTE emissions will be below the major source threshold yet it will be subject to a NSPS regulation (Subpart XX).
Prevention of Significant Deterioration (PSD) *[40 CFR 52.21; HAR 11-60.1 Subchapter 7]*	PSD is not applicable because the proposed project will not cause Mid Pac to change from a synthetic minor stationary source to a major stationary source. PSD only applies to projects at major stationary sources.
Best Available Control Technology (BACT) *[HAR 11-60.1-1; HAR 11-60.1-61]*	The proposed project is not subject to a BACT analysis because it does not increase emissions above the significance thresholds defined in HAR §11-60.1, i.e. 40 tpy for NOx, SOx, PM, and VOC and 100 tpy for CO. See Tables B1-1 and B1-2 for a summary of pre-project and post-project criteria pollutant emissions.
NESHAP Subpart R – NESHAP for Major HAP Source Gasoline Distribution *[40 CFR 63.420; HAR 11-60.1 Subchapter 9]*	The Phase I upgrade project will not cause Mid Pac to change from a HAP area source to a HAP major source. As such, NESHAP Subpart R, which regulates gasoline distribution at major HAP sources, does not apply.
NESHAP Subpart BBBBBB – NESHAP for Area HAP Source Gasoline Distribution *[40 CFR 63.11080; HAR 11-60.1 Subchapter 9]*	Mid Pac, after the proposed project, will remain a HAP area source and be subject to NESHAP Subpart BBBBBB, which regulates gasoline distribution at area HAP sources. Mid Pac's proposed throughput limit for gasoline is greater than 20,000 gal/day but less than 250,000 gal/day. All of Mid Pac's gasoline storage tanks have capacities greater than 75 cubic meters (471 barrels). Mid Pac will continue to comply with Subpart BBBBBB as follows: 1) operate each gasoline storage tank with an internal floating roof; 2) use submerged filling for the loading of tank trucks; and 3) conduct monthly equipment leak inspections. Lastly, applicability to Subpart BBBBBB does not trigger covered source permitting because, pursuant to §63.11081(b), it is one of the NESHAP regulations that, by itself, does not trigger Part 70 permitting.
NSPS Subpart XX – NSPS for Bulk Gasoline	The proposed project involves the following scope at the gasoline loading rack -- replacing pumps for higher flow rates,

Table D-1 – Regulation Applicability Evaluation

Regulation	Applicability Evaluation
Terminals *[40 CFR 60.500; HAR 11-60.1 Subchapter 8]*	installing ethanol inline equipment, installing 1 to 3 additional new loading arm(s), upgrading the automation system, and increasing the annual gasoline throughput limits. This scope constitutes an NSPS "modification" because it is physical and operational change that increases VOC emissions. The changes do not meet any of the "modification" exemptions listed in 40 CFR 60.14(e), including being one that increases "...production rate...without a capital expenditure." Therefore, the gasoline loading rack will become subject to Subpart XX and Mid Pac will comply by installing a flare to control gasoline loading vapors. Controlled VOC emissions from gasoline loading will meet the Subpart XX standard of 35 mg/l of gasoline loaded.
NSPS Subpart A, Section 60.18 – NSPS control device requirements for flares *[40 CFR 60.500; HAR 11-60.1 Subchapter 8]*	The proposed flare serving the gasoline loading rack will meet the general NSPS Subpart A control device requirements for a flare. These requirements include operating with no visible emissions, operating with a pilot flame at all times, combusting gases with a minimum LHV of 200 btu/scf (non-assisted flare), and operating with the maximum exist velocity specified in Section 60.18(b)(4).
NSPS IIII – NSPS for Stationary Compression Ignition Internal Combustion Engines *[40 CFR 60.4200; HAR 11-60.1 Subchapter 8]*	Mid Pac plans to install a new generator, powered by a diesel-fueled IC engine (≤ 300 bhp), to provide supplemental electricity at the gasoline loading rack. The engine is a non-emergency compression ignition (CI) internal combustion (IC) engine and will be subject to NSPS Subpart IIII. Mid Pac plans to purchase a Tier 4 engine which will meet the requirements of Subpart IIII. Lastly, applicability to Subpart IIII does not trigger covered source permitting because, pursuant to §60.4200(c), it is one of the NSPS regulations that, by itself, does not trigger Part 70 permitting.
NESHAPS ZZZZ - NESHAP Stationary Reciprocating Internal Combustion Engines *[40 CFR 63.6580; HAR 11-60.1 Subchapter 9]*	The diesel-fueled reciprocating IC engine (RICE) will also be subject to NESHAP Subpart ZZZZ as a new non-emergency RICE located at an area HAP source. Per §63.6590(c), compliance with NSPS Subpart IIII will satisfy the requirements for NESHAP Subpart ZZZZ. Lastly, applicability to Subpart ZZZZ does not trigger covered source permitting because, pursuant to §63.6585(d), it is one of the NESHAP regulations that, by itself, does not trigger Part 70 permitting.
NSPS Subpart Kb – NSPS for Volatile Organic Liquid Storage Vessels	The proposed project will install four (4) to six (6) 645 barrel (27,090 gallon) temporary aboveground storage tanks (ASTs) in denatured ethanol or diesel service. NSPS Subpart Kb does not apply to these tanks because they have design capacities less

Table D-1 – Regulation Applicability Evaluation

Regulation	Applicability Evaluation
[40 CFR 60.110b; HAR 11-60.1 Subchapter 8]	than 151 cubic meters (39,900 gallons) and will exclusively store denatured ethanol or diesel with maximum true vapor pressures less than 15.0 kPa (2.2 psia) [40 CFR 60.110b(b)].
Consolidated Emissions Reporting Rule (CERR) 40 CFR 51 Subpart A	CERR emission inventory reporting requirements do not apply because criteria pollutant actual emissions from Type B point sources are below the threshold levels of 100 tons per year. However, the Clean Air Branch, by internal policy, requires annual emissions reporting from covered sources. Mid Pac will become a covered source as a result of the proposed project.
Compliance Assurance Monitoring (CAM) [40 CFR 64]	CAM does not apply primarily because Mid Pac is not a major stationary source. The purpose of CAM is to provide a reasonable assurance that compliance is being achieved with large emissions units that rely on air pollution control device equipment to meet an emissions limit or standard. In order for the flare to be subject to CAM, it must be: (1) be located at a major source; (2) be subject to an emissions limit or standard; (3) use a control device to achieve compliance; (4) have potential pre-control emissions that are 100% of the major source level; and (5) not otherwise be exempt from CAM.
Greenhouse Gas Emissions *[HAR 11-60.1 Subchapter 11]*	The proposed project is not required to obtain a PSD permit that address GHG emissions. Mid Pac is not subject to PSD for GHG emissions because it does not emit GHG emissions over 100,000 tpy CO2e. See Table B1-4 for a summary of pre-project and post-project GHG emissions.

E. Identify and describe current operational limitations or work practices, or for covered sources that have not yet begun operation, such limitations or practices which the owner or operator of the source plans to implement that affect emissions of any regulated or hazardous air pollutant. Provide all calculations and assumptions.

Mid Pac is proposing, as part of this permit application, to establish the federally enforceable throughput limits listed in Table 1 (see Item B) to limit the facility's potential-to-emit VOC emissions below 100 tons per year. As such, Mid Pac will remain a synthetic minor stationary source.

The federally enforceable throughput limits will also ensure Mid Pac's potential-to-emit stays below 10 tons per year of any single for hazardous air pollutant (HAP) and below 25 tons per year of any combination of HAPs. As such, Mid Pac will remain an area HAP source and not become a major HAP source.

F. Provide a detailed schedule for construction or modification of the proposed source, including any major milestones, if applicable.

Mid Pac is prepared to commence construction as soon as the permit is processed.

G. For **new** covered sources and **significant** modifications which increase the emissions of any air pollutant or result in the emission of any air pollutant not previously emitted, an assessment of the ambient air quality impact of the covered source or significant modification, with the inclusion of any available background air quality data. The assessment shall include all supporting data, calculations and assumptions, and a comparison with the NAAQS and SAAQS.

Mid Pac conducted an AERSCREEN model of the flare and diesel generator. A screening model is more conservative than a refined model. Results indicate that the Mid Pac Kauai Terminal PTE emissions are below the National Ambient Air Quality Standard for NOx, SOx, PM, and CO. Detailed results and modelling parameters can be found in Appendix F.

H. For **new** covered sources and **significant** modifications subject to the requirements of subchapter 7 of HAR Chapter 11-60.1, all analyses, assessments, monitoring, and other application requirements of subchapter 7.

Subchapter 7, Prevention of Significant Deterioration (PSD), is not applicable because the facility is not a major source.

I. Provide detailed information to define permit terms and conditions for any proposed **emissions trading** within the facility in accordance with HAR §11-60.1-96.

N/A

J. Provide the following for compliance purposes:

1. A Compliance Plan, Form C-1.
2. A Compliance Certification, Form C-2.

A compliance plan on Form C-1 is provided in Attachment C. A compliance certification on Form C-2 is provided in Attachment D.

II. Submit an application fee according to the Application Fee Schedule in the Instructions for Applying for an Air Pollution Control Permit

A check in the amount of $1,000 is enclosed in payment of the DOH application fee for an initial permit for a non-major, non-toxic covered source.

III. Provide other information as follows:

A. As required by any applicable requirement or as requested and deemed necessary by the Director of Health (hereafter, Director) to make a decision on the application.

B. As may be necessary to implement and enforce other applicable requirements of the Clean Air Act or of HAR Chapter 11-60.1 or to determine the applicability of such requirements.

IV. The Director reserves the right to request the following information:

A. An assessment of the ambient air quality impact of the source or modification. The assessment shall include all supporting data, calculations and assumptions, and a comparison with the National Ambient Air Quality Standards and State Ambient Air Quality Standards.

B. A risk assessment of the air quality related impacts caused by the covered source or significant modification to the surrounding environment.

C. Results of source emissions testing, ambient air quality monitoring, or both.

D. Information on other available control technologies.

V. An application shall be determined to be complete only when all of the following have been complied with:

A. All information required or requested in numbers **I, III, and IV** has been submitted.

B. All documents requiring certification have been certified pursuant to HAR §11-60.1-4.

C. All applicable fees have been submitted.

D. The Director has certified that the application is complete.

VI. The Director shall not continue to act upon or consider an incomplete application.

A. The applicant shall be notified in writing whether the application is complete:
   1. For the requirements of subchapter 7, thirty days after receipt of the application.
   2. For the requirements of HAR subchapter 5, sixty days after receipt of the application. For purposes of this paragraph, the date of receipt of an application for a new covered source or significant modification subject to the requirements of subchapter 7 shall be the date the application is determined to be complete for the requirements of subchapter 7.
   3. Unless the Director requests additional information or notifies the applicant of incompleteness within sixty days after receipt of an application pursuant to VI.A.2 above, the application shall be deemed complete for the requirements of subchapter 5.

B. During the processing of an application that has been determined or deemed complete, if additional information is necessary to evaluate or take final action on the application, the Director may request such information in writing and set a reasonable deadline for a response.

VII. After receipt of a complete application, the Director, in writing, shall approve, conditionally approve, or deny an application within eighteen months, except as provided in HAR §11-60.1-88 and (A) and (B) below.

A. Upon program approval, within nine months for an application containing an early reduction demonstration pursuant to section 112(i)(5) of the Clean Air Act.

B. Within twelve months for a new covered source or significant modification subject to the requirements of subchapter 7.

VIII. A Covered Source Permit application for a new covered source or a significant modification shall be approved only if the Director determines that the construction or operation of the new covered source or significant modification will be in compliance with all applicable requirements.

IX. The Director shall provide for public notice, including the method by which a public hearing can be requested, and an opportunity for public comment on the draft Covered Source Permit in accordance with HAR §11-60.1-99.

X. The Director shall provide a statement that sets forth the legal and factual bases for the draft permit conditions (including references to the applicable statutory or regulatory provisions) to EPA and any other person requesting it.

XI. Each application and proposed Covered Source Permit shall be subject to EPA oversight in accordance with HAR §11-60.1-95.

Attachment C

Form C-1
Compliance Plan

Kauai Terminal Upgrade Project – Phase I
Application for an Initial Covered Source Permit

Mid Pac Petroleum, LLC
Kauai Petroleum Co., Ltd.
Petroleum Bulk Loading Terminal
Permit No. 0370-01-N

Mid Pac PETROLEUM

File No.: _____

C-1: Compliance Plan

The Responsible Official shall submit a Compliance Plan as indicated in the Instructions for Applying for an Air Pollution Control Permit and at such other times as requested by the Director of Health (hereafter, Director).

Use separate sheets of paper if necessary.

---

1. Compliance status with respect to all Applicable Requirements:

   Will your facility be in compliance, or is your facility in compliance, with all applicable requirements in effect at the time of your permit application submittal?

   [X] YES {If YES, complete items a and c below}

   [ ] NO {If NO, complete items a, b, and c below}

   a. Identify all applicable requirement(s) for which compliance is achieved.

   Noncovered Source Permit No. 0370-01-N, Attachment I, Standard Conditions
   Noncovered Source Permit No. 0370-01-N, Attachment IIA, Special Conditions – Equipment Description
   Noncovered Source Permit No. 0370-01-N, Attachment IIB, Special Conditions – Emission and Operational Limitations and/or Standards
   Noncovered Source Permit No. 0370-01-N, Attachment IIC, Special Conditions – Monitoring and Recordkeeping Requirements
   Noncovered Source Permit No. 0370-01-N, Attachment IID, Special Conditions – Notification and Reporting Requirements
   Noncovered Source Permit No. 0370-01-N, Attachment IIE, Special Conditions – Agency Notification
   Noncovered Source Permit No. 0370-01-N, Attachment III, Annual Fee Requirements
   Noncovered Source Permit No. 0370-01-N, Attachment IV, Annual Emissions Reporting Requirements
   NESHAP Subpart BBBBBB – NESHAP for Area HAP Source Gasoline Distribution

   Provide a statement that the source is in compliance and will continue to comply with all such requirements.
   The Kauai Petroleum Co., Ltd. – Kauai Terminal is currently in compliance, and will continue to be in compliance, with the terms and conditions of its Noncovered Source Permit No. 0370-01-N.

   b. Identify all applicable requirement(s) for which compliance is NOT achieved.
   None

Provide a detailed Schedule of Compliance Schedule and a description of how the source will achieve compliance with all such applicable requirements.

Description of Remedial Action	Expected Date of Completion
N/A	N/A

c. Identify any other applicable requirement(s) with a future compliance date that your source is subject to. These applicable requirements may take effect AFTER permit issuance:

Applicable Requirement	Effective Date	Currently in Compliance?
NESHAPS ZZZZ - NESHAP Stationary Reciprocating Internal Combustion Engines	Upon Operation	No
NSPS IIII – NSPS for Stationary Compression Ignition Internal Combustion Engines	Upon Operation	No
NSPS XX – NSPS for Bulk Gasoline Terminals	Upon Operation	No

If the source is not currently in compliance, provide a Schedule of Compliance and a description of how the source will achieve compliance with all such applicable requirements:

Description of Proposed Action/Steps to Achieve Compliance	Expected Date of Achieving Compliance
A preliminary regulation applicability evaluation is available in Table D-1 of Form S-2. In anticipation of achieving compliance with NESHAPS ZZZZ, NSPS IIII, and NSPS XX, Mid Pac proposes to 1) ensure that the diesel generator will be EPA Tier 4 certified, and 2) establish all necessary monitoring, maintenance, recordkeeping, reporting, and testing procedures.	Upon Operation

Provide a statement that the source on a timely basis will meet all these applicable requirements:
The Kauai Petroleum Co., Ltd. – Kauai Terminal will be in compliance with applicable requirements on a timely basis.

If the expected date of achieving compliance will NOT meet the applicable requirement's effective date, provide a more detailed description of each remedial action and the expected date of completion:

Description of Remedial Action and Explanation	Expected Date of Completion
N/A	N/A

2. Compliance Progress Reports:

a. If a compliance plan is being submitted to remedy a violation, complete the following information:

Frequency of Submittal: N/A (less than or equal to 6 months) Beginning Date: N/A

b. Date(s) that the Action described in (1)(b) was achieved:

Remedial Action	Date Achieved
N/A	N/A

c. Narrative description of why any date(s) in (1)(b) was not met, and any preventive or corrective measures taken in the interim:

N/A

RESPONSIBLE OFFICIAL (as defined in HAR §11-60.1-1)

Name (Last): Hirashima (First): Sayle (MI): _____

Title: CFO/VP Phone: (808) 535-5990

Mailing Address: 1100 Alakea Street, 8th Floor

City: Honolulu State: HI Zip Code: 96813-2833

Certification by Responsible Official (pursuant to HAR §11-60.1-4)

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Department of Health as public record. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with the Hawaii Administrative Rules, Title 11, Chapter 60.1, Air Pollution Control, and any permit issued thereof.

Name (Print/Type): Sayle Hirashima

(Signature): K Hirashima Date: 9/29/14

Facility Name: Kauai Petroleum Co., Ltd. – Kauai Terminal

Location: 3185 Waapa Road, Lihue, Kauai

Permit Number: 0370-01-N

FOR AGENCY USE ONLY

File/Application No.: _____

Island: _____

Date Received: _____

Attachment D

Form C-2
Compliance Certification

Kauai Terminal Upgrade Project – Phase I
Application for an Initial Covered Source Permit

Mid Pac Petroleum, LLC
Kauai Petroleum Co., Ltd.
Petroleum Bulk Loading Terminal
Permit No. 0370-01-N

Mid Pac PETROLEUM

File No.: _____

C-2: Compliance Certification

The Responsible Official shall submit a Compliance Certification as indicated in the Instructions for Applying for an Air Pollution Control Permit and at such other times as requested by the Director of Health (hereafter, Director).

Complete as many copies of this form as needed. Use separate sheets of paper if necessary.

RESPONSIBLE OFFICIAL (as defined in HAR §11-60.1-1)

Name (Last): Hirashima (First): Sayle (MI): _____

Title: CFO/VP Phone: (808) 535-5990

Mailing Address: 1100 Alakea Street, 8th Floor

City: Honolulu State: HI Zip Code: 96813-2833

Certification by Responsible Official (pursuant to HAR §11-60.1-4)

I certify that I have knowledge of the facts herein set forth, that the same are true, accurate and complete to the best of my knowledge and belief, and that all information not identified by me as confidential in nature shall be treated by the Department of Health as public record. I further state that I will assume responsibility for the construction, modification, or operation of the source in accordance with the Hawaii Administrative Rules, Title 11, Chapter 60.1, Air Pollution Control, and any permit issued thereof.

Name (Print/Type): Sayle Hirashima

(Signature): _____ Date: 9/29/17

Facility Name: Kauai Petroleum Co., Ltd. Petroleum Bulk Loading Terminal

Location: 3185 Waapa Road Lihue,HI 96766

Permit Number: 0370-01-N

FOR AGENCY USE ONLY
File/Application No.: _____
Island: _____
Date Received: _____

Complete the following information for ***each*** applicable requirement that applies to ***each*** emissions unit at the source. Also include any additional information as required by the Director. The compliance certification may reference information contained in a previous compliance certification submittal to the Director, provided such referenced information is certified as being current and still applicable.

1. Schedule for submission of Compliance Certifications during the term of the permit:

   Frequency of Submittal: Annual Beginning Date: TBD

2. Emissions Unit No./Description: Kauai Petroleum Co., Ltd. – Kauai Terminal

3. Identify the applicable requirement(s) that is/are the basis of this certification:

   See accompanying Compliance Plan, Section (1)(a)

4. Compliance status:

   a. Will the emissions unit be in compliance with the identified applicable requirement(s)?

      [X] YES [ ] NO

   b. If YES, will compliance be continuous or intermittent?

      [X] Continuous [ ] Intermittent

   c. If NO, explain:

5. Describe the methods to be used in determining compliance of the emissions unit with the applicable requirement(s), including any monitoring, recordkeeping, reporting requirements, and/or test methods:

   Periodic visual inspections; physical inspections; throughput volume recordkeeping based on tape gauging; monthly leak inspections of all equipment in gasoline service; keep record of dates when any floating roof is set on its legs or when refloated; records of occurrence and duration for each malfunction of air pollution control and monitoring equipment; records of corrective actions to restore malfunctioning equipment

   Provide a detailed description of the methods used to determine compliance (e.g. monitoring device type and location, test method description, or parameter being recorded, frequency of recordkeeping, etc.):

   Visual/physical inspections; non-resetting volumetric flow meters; certificates of quality; portable gas monitors; load rack receipts; written inspection logs

6. Statement of Compliance with Enhanced Monitoring and Compliance Certification Requirements.

a. Will the emissions unit identified in this application be in compliance with applicable enhanced monitoring and compliance certification requirements?

☐ YES ☒ NO

b. If YES, identify the requirements and the provisions being taken to achieve compliance:

c. If NO, describe below which requirements will not be met:

There are no known Enhanced Monitoring and Compliance Certification requirements

Attachment E

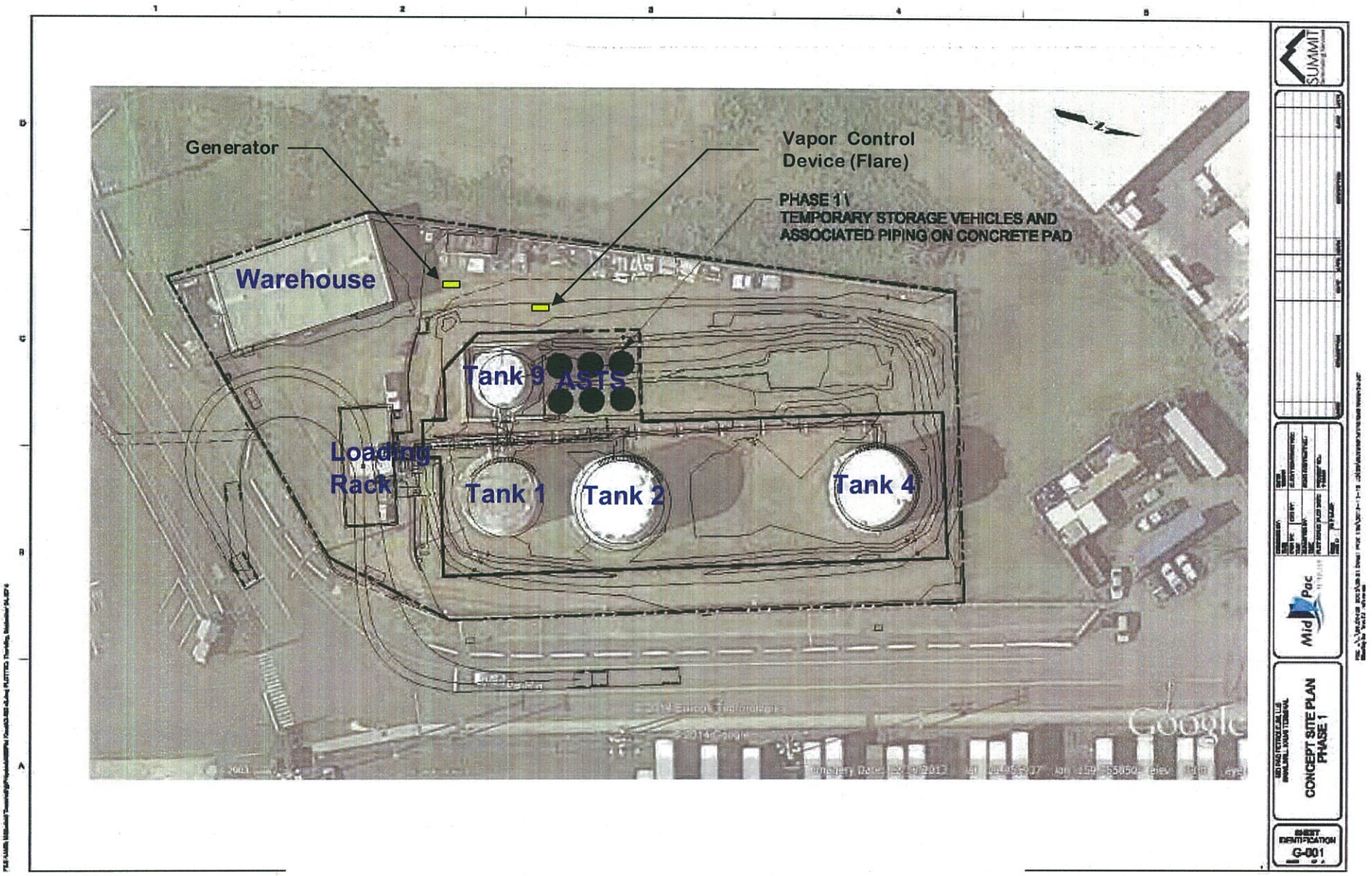
Facility Plot Plan
Proposed Phase I Modifications

Kauai Terminal Upgrade Project – Phase I
Application for an Initial Covered Source Permit

Mid Pac Petroleum, LLC
Kauai Petroleum Co., Ltd.
Petroleum Bulk Loading Terminal
Permit No. 0370-01-N

Mid Pac PETROLEUM

Appendix E: Phase 1 Modification Facility Plot Plan



Attachment F

Air Quality Assessment

Kauai Terminal Upgrade Project – Phase I
Application for an Initial Covered Source Permit

Mid Pac Petroleum, LLC
Kauai Petroleum Co., Ltd.
Petroleum Bulk Loading Terminal
Permit No. 0370-01-N

Mid Pac PETROLEUM

Ambient Air Quality Assessment:

Per §11-60.1-83 (11), an air quality impact assessment is required for existing covered sources pursing an application for an initial covered source permit. Mid Pac conducted a screening model of potential to emit (PTE) emissions of NOx, SOx, PM, and CO. These emissions are emitted from the proposed flare and generator, which were the only two modeled sources. VOCs emissions were excluded from modeling because there is no National Ambient Air Quality Standard for VOCs and emissions come from fugitive sources such as storage tanks, the truck loading rack, and component fugitives.

The air quality assessment used the EPA's AERSCREEN model to quantify ambient air pollutant impacts on the surrounding areas and assess compliance with the National Ambient Air Quality Standard. AERSCREEN is EPA's most recommended screening model since it provides a "worst-case" 1-hour concentration estimate without the need of hourly meteorological data. Conversion factors are provided by the model to also determine 3-hour, 8-hour and 24-hour concentrations. Using a screening model analysis such as AERSCREEN will give more conservative results than using a refined modeling analysis such as AERMOD. AERSCREEN model results indicate that the Kauai Terminal PTE emissions are below the National Ambient Air Quality Standard for NOx, SOx, PM, and CO.

The parameters used in the AERSCREEN model for both the flare and the diesel generator are presented below.

I. Device Parameters

Device parameters were determined from a combination of vendor feedback and engineering estimates.

Parameter	Value	Units
Flare		
Flare Height	13.09	ft
Flare Heat Rate	179,600	cal/sec
Heat Loss Fraction	0.55	-
Model Mode	Rural	-
NOx to NO2 Chemistry	PVMRM	
NO2/NOx in-stack ratio	0.057	ppm
Diesel Generator		
Stack Height	8.5	ft
Stack Diameter	3	in
Stack Temperature	700	°F
Exit Velocity	375	ft/s
Model Mode	Rural	-
NOx to NO2 Chemistry	PVMRM	-
NO2/NOx in-stack ratio	0.057	ppm

II. Meteorological Assumptions

Meteorological inputs determined from assumed urban terrain with average moisture and winter as the dominant season.

Parameter	Value	Units
Minimum Temperature	64	°F
Maximum Temperature	84	°F
Albedo	0.35	-
Bowen Ratio	1.5	-
Roughness Length	1	m

III. Building Downwash

Downwash contribution to ambient air quality was determined to be greatest from Tank No. 9. Other nearby buildings, including the warehouse and other tanks, were considered, and determined to have a lower impact on concentrations than Tank No. 9.

Downwash was modeled under the assumption that both the flare and the generator were 50 feet from the center of the tank (approximately 37 feet from the edge of the tank).

Downwash Parameters	Value	Units
Building Height	32	ft
Building Width	26	ft
Building Length	26	ft
Stack Distance from Center Point	50	ft

IV. Maximum Modeled Impacts for Each Device

Hourly emission averages were calculated based on PTEs for the generator and flare (see Appendix G for details). The flare was conservatively assumed to operate for 8 hours a day and the diesel generated was assumed to operate for 13 hours a day. Model conversion factors for 3-hr, 8-hr, 24-hr and annual averages are 1.0, 0.9, 0.6 and 0.1 respectively. However, the State of Hawaii requires a default scaling factor of 0.2 for annual averages.

Pollutant	Averaging Period	Emission Rate (g/s)	Max Modeled Generator Concentration (µg/m3)	Emission Rate (g/s)	Max Modeled Flare Concentration (µg/m3)
		Diesel Generator		Flare	
NO_2	1-hr	0.02486	79.15	0.04941	93.58
	Annual	0.02486	15.83	0.04941	18.72
SO_2	1-hr	0.00004	1.42	--	--
	3-hr	0.00004	1.42	--	--
	24-hr	0.00004	0.85	--	--
	Annual	0.00004	0.28	--	--
CO	1-hr	0.21750	769.39	0.06515	137.11
	8-hr	0.21750	692.45	0.06515	123.40
PM_{10}	24-hr	0.00124	2.63	0.00877	11.07
	Annual	0.00124	0.88	0.00877	3.69
$PM_{2.5}$	24-hr	0.00124	2.63	0.00877	11.07
	Annual	0.00124	0.88	0.00877	3.69

V. Predicted Ambient Air Quality Impacts for the Flare and Generator

The predicted air quality impacts are shown in the table below. The table demonstrates the impacts of NO_2, SO_2, CO, PM_{10}, and $PM_{2.5}$ from the combined impact of the flare, diesel generator, and background concentration. Given that this table shows a very conservative estimate of ambient emissions, the new devices should not cause or contribute to a violation of any State or National ambient air quality standard.

Pollutant	Averaging Period	Max Modeled Generator Concentration ($\mu g/m_3$)	Max Modeled Flare Concentration ($\mu g/m_3$)	Background Concentration ($\mu g/m_3$)[1]	Maximum Total Concentration ($\mu g/m_3$)	AAQS ($\mu g/m_3$)[2]	Percent of AAQS (%)
NO_2	1-hr	79.15	93.58	11.29	184.02	188	97.9%
	Annual	15.83	18.72	1.88	36.43	75	48.6%
SO_2	1-hr	1.42	--	7.6	9.02	196	4.6%
	3-hr	1.42	--	5.76	7.18	1300	0.6%
	24-hr	0.85	--	2.62	3.47	265	1.3%
	Annual	0.28	--	2.62	2.90	80	3.6%
CO	1-hr	769.39	137.11	802	1708.5	10000	17.1%
	8-hr	692.45	123.40	687	1502.85	5000	30.1%
PM_{10}	24-hr	2.63	11.07	14.9	28.61	150	19.1%
	Annual	0.88	3.69	14.9	19.47	50	38.9%
$PM_{2.5}$	24-hr	2.63	11.07	8.7	22.41	35	64.0%
	Annual	0.88	3.69	3.9	8.47	12	70.6%

[1] Background concentrations from the Niumalu Monitoring Station for NO_2 (1-hr, Annual), SO_2 (1-hr, 3-hr, 24-hr, Annual), and $PM_{2.5}$ (24-hr, Annual) and from the Kapolei Monitoring Station for CO (1-hr, 8-hr) and PM_{10} (24-hr, Annual). The concentration maximums for 2013 were used for all averaging periods, except the annual periods, which used concentration averages.

[2] Only the more restrictive of the Nation Ambient Air Quality Standard or State Ambient Air Quality Standards are shown.

Attachment G

Potential-to-Emit Emission Calculations

Kauai Terminal Upgrade Project – Phase I
Application for an Initial Covered Source Permit

Mid Pac Petroleum, LLC
Kauai Petroleum Co., Ltd.
Petroleum Bulk Loading Terminal
Permit No. 0370-01-N

Mid Pac PETROLEUM

Attachment G-1: Facility PTE Emissions
Criteria Pollutants: NOx, SOx, CO, and PM Emissions

Equipment	NOx (tpy)	SOx (tpy)	CO (tpy)	PM (tpy)
Flare	0.6	0.0	0.8	0.1
Diesel Generator	0.5	0.0	4.1	0.0
Total, tpy =	**1.0**	**0.0**	**4.9**	**0.1**

Attachment G-2: Facility PTE Emissions
VOC and HAP Emissions

Hazardous Air Pollutant		Benzene	Ethylbenzene	Methanol	n-Hexane	Toluene	Xylenes (Mixed Isomers)	Naphthalene
Gasoline/ Naphtha	Liquid Wt. %	2.82	0.04		20.03	0.37	0.25	
	Vapor Wt. %	0.70	0.00		7.89	0.03	0.01	
Jet	Liquid Wt. %							0.43
	Vapor Wt. %							0.24
Diesel	Liquid Wt. %	0.00	0.05		0.03	0.08	0.24	0.28
	Vapor Wt. %	0.74	0.91		8.03	3.98	3.45	0.21
Denatured Ethanol	Liquid Wt. %	0.00	0.00	0.04	0.02	0.03	0.01	
	Vapor Wt. %	0.00	0.00	0.07	0.04	0.01	0.00	

	VOC Emissions				HAP Emissions						
Equipment	Total lb/yr	Tank Withdrawal Loss (Floaters Only) lb/yr	Tank Other Losses lb/yr	Material	Benzene lb/yr	Ethylbenzene lb/yr	Methanol lb/yr	n-Hexane lb/yr	Toluene lb/yr	Xylenes (Mixed Isomers) lb/yr	Naphthalene lb/yr
Tank 1	6,351	88	6,263	Gasoline/ Naphtha	46	0		512	2	1	
Tank 2	217	201	16	Jet							1
Tank 4	64	59	5	Diesel	0	0		0	0	0	0
Tank 4	3,260	85	3,175	Gasoline/ Naphtha	25	0		268	1	0	
Tank 9	4,955	52	4,903	Gasoline/ Naphtha	36	0		398	2	0	
AST 1	189	12	176	Denatured Ethanol/ Diesel	0	0	0	0	0	0	
AST 2	189	12	176	Denatured Ethanol/ Diesel	0	0	0	0	0	0	
AST 3	189	12	176	Denatured Ethanol/ Diesel	0	0	0	0	0	0	
AST 4	189	12	176	Denatured Ethanol/ Diesel	0	0	0	0	0	0	
AST 5	189	12	176	Denatured Ethanol/ Diesel	0	0	0	0	0	0	
AST 6	189	12	176	Denatured Ethanol/ Diesel	0	0	0	0	0	0	
Truck Loading Rack	3,500			Gasoline/ Naphtha	24	0		276	1	0	
	178			Diesel	1	2		14	7	6	0
	800			Jet							2
	38			Denatured Ethanol	0	0	0	0	0	0	
Diesel Generator	6,422			Diesel	48	59		516	255	221	13
Flare	445			Gasoline/ Naphtha	3	0		35	0	0	
Component Fugitives	367			Gasoline/ Naphtha	3	0		29	0	0	
Total, lb/y =	**27,730**			Total, lb/y =	**186**	**61**	**1**	**2,048**	**269**	**229**	**17**
Total, tpy =	**13.9**			Total, tpy =	**0.1**	**0.0**	**0.0**	**1.0**	**0.1**	**0.1**	**0.0**

Notes:
1 Speciation profile of Gasoline/ Naphtha is based on lab samples of Naphtha (most conservative emission scenario, i.e. PTE)
2 Speciation profile of Denatured Ethanol used for ASTs (most conservative emission scenario, i.e. PTE)
3 Speciation profile of Gasoline/ Naphtha used for Flare (most conservative emission scenario, i.e. PTE)

Total HAPs	
Total, lb/y =	**2,810**
Total, tpy =	**1.4**

Attachment G-3: Facility PTE Emissions
Truck Loading Rack Fugitives

Material	S [1]	MWv	PSIA	T (F)	T (R)	AP-42 EF (lb/mbbl)	Flare Capture Efficiency	bbl/yr	VOC lb
Gasoline/ Naphtha	0.60	66	7.328	75.6	535	283.73	98.70%	949,000	3,500
Diesel	0.60	130	0.011	75.6	535	0.81	0.00%	219,000	178
Jet	0.60	130	0.013	75.6	535	1.01	0.00%	793,000	800
Denatured Ethanol	0.60	47	1.103	75.6	535	30.41	98.70%	94,900	38
								Total, lb/y =	**4,516**
								Total, tpy =	**2.3**

Notes:

1 Loading emissions are calculated by AP-42, Loading Equation (1), Table 5.2-1 and Table 5.2-2.

LL =	Loading Loss, lb/mgal	=	12.46 (SPM/T) (1 - eff/100) where	
S =	Saturation Factor	=	0.60	- Assume tanker trucks arrive without saturated vapors. No controls at gas stations
TdegF =	Temp, degF	=	75.6	- Average bulk liquid temperature in Lihue, Hawaii per TANKS database
Eff =	Overall Control Eff, %	=	0.987	AP-42 CH 5.2 collection efficiency

2 The maximum vapor pressure of Gasoline/ Naphtha is:

RVP, psia	=	10.5	- Limiting RVP based on supplier's sampling data
TdegF	=	75.6	- Average bulk liquid temperature in Lihue, Hawaii per TANKS database
Slope	=	3.0	- AP-42, Figure 7.1-14a; Motor Gasoline
TVP, psia	=	7.3	- AP-42, Figure 7.1-14b; equation for calculating true vapor pressure from RVP

3 The maximum vapor pressure of Diesel is:

TdegF	=	75.6	- Average bulk liquid temperature in Lihue, Hawaii per TANKS database
TVP, psia	=	0.011	- AP-42, properies of distillate fuel oil no. 2

4 The maximum vapor pressure of Jet is:

TdegF	=	75.6	- Average bulk liquid temperature in Lihue, Hawaii per TANKS database
TVP, psia	=	0.013	- AP-42, properies of jet kerosene

5 The maximum vapor pressure of denatured Ethanol is:

TdegF	=	75.6	- Average bulk liquid temperature in Lihue, Hawaii per TANKS database
TVP, psia	=	1.10	- AP-42, Table 7.1-5; vapor pressure equation constants for organic liquids (Ethanol)

Attachment G-4: Facility PTE Emissions
Flare (Loading Rack Vapors and Pilot Gas)

Flare Combustion of Loading Rack Vapors

Material	Loading Capture Efficiency	Flare Destruction Efficiency [5]	VOC sent to flare, lb	Uncombusted VOC in Flare, lb	Combusted VOC in Flare, lb
Gasoline/ Naphtha	98.7%	98%	265,763	5,315	260,448
Diesel [6]	0%	0%	0	0	0
Jet [6]	0%	0%	0	0	0
Denatured Ethanol	98.7%	98%	2,849	57	2,792
		Total =	268,612	5,372	263,240

Flare Combustion of Loading Rack Vapors

Pollutant	Combusted VOC in Flare, lb	HHV (BTU/lb VOC) [1]	EF (lb/MMBTU) [2,3,4]	Emissions (lb/yr)	Emissions (tpy)
VOCs [7]	263,240	28,436	0.14	6,420	**3.2**
NOx	263,240	28,436	0.15	1,123	**0.6**
CO	263,240	28,436	0.20	1,497	**0.7**
PM	263,240	28,436	0.03	202	**0.1**
			Total =	9,242	**4.6**

Propane Pilot Gas Combustion

Pollutant	Flow Rate (CF/hr) [8]	Density (lb/gal) [9]	EF (lb/mgal) [10]	Operating Hours per Year [11]	Emissions (lb/yr)	Emissions (tpy)
VOCs	22	4.25	1.0	2,920	2	**0.0**
NOx	22	4.25	13.0	2,920	23	**0.0**
CO	22	4.25	7.5	2,920	13	**0.0**
PM	22	4.25	0.7	2,920	1	**0.0**
				Total =	38	**0.0**

Total Flare Emissions (Loading Rack Vapors and Pilot Gas)

Pollutant	Emissions (lb/yr)	Emissions (tpy)
VOCs	6,422	**3.2**
NOx	1,145	**0.6**
CO	1,510	**0.8**
PM	203	**0.1**
Total =	9,281	**4.6**

Notes:

1 Assumed gasoline profile for HHV (NIST Chemistry WebBook)
2 NOx and CO EFs provided by manufacturer (John Zink)
3 PM EF from EPA ICR Protocol
4 VOC EF from AP-42 Table 13.5-1
5 Destruction efficiency provided by manufacturer is 98% (John Zink)
6 Only Gasoline, Naphtha, and Denatured Ethanol loading operations will be controlled
7 VOC emissions include both uncombusted organics and organics formed during combustion
8 Pilot gas flow rate provided by manufacturer (John Zink)
9 LPG density per Enggcyclopedia
10 LPG EF from AP-42 Table 1.5-1
11 Vapor control device (flare) expected to operate 8 hr/day max

Attachment G-5: Facility PTE Emissions
Component Fugitives

Component Type	Number of Components [1]	kg/hr/source	lb/hr/source	Operating Hours	Emissions (lb/yr)
Flanges	359	8.00E-06	1.76E-05	8760	55
Connector	34	8.00E-06	1.76E-05	8760	5
Others	38	1.30E-04	2.87E-04	8760	95
Pumps	8	5.40E-04	1.19E-03	8760	83
Valves	154	4.30E-05	9.48E-05	8760	128
Total	593			Total, lb/y =	**367**
				Total, tpy =	**0.2**

Notes:

1 Total component counts include proposed estimates for Phase I

Attachment G-6: Facility PTE Emissions
Diesel Generator

Pollutant	Tier 4 Emission Factor (g/kWh)	Sulfur Content (ppm) [3]	SO2 EF (lbm/gal) [4]	Max Fuel Consumption (gal/hr)	Engine Capacity (bhp) [1]	Engine Capacity (kW)	Operating Hours (hrs/yr) [3]	Tier 4 Emissions (lb/yr)	Tier 4 Emissions (tpy)
VOCs	0.19			8.25	300	224	4745	445	0.2
NOx	0.4			8.25	300	224	4745	936	0.5
SOx [3]		15	3.63E-05	8.25	300	224	4745	1.42	0.0
PM	0.02			8.25	300	224	4745	47	0.0
CO	3.5			8.25	300	224	4745	8,192	4.1
							Total =	**9,622**	**4.8**

Notes:

1 Diesel Generator will be no more than 300 hp and EPA Tier 4 certified

2 Diesel Generator will operatate at most 13 hours per day

3 Sulfur content based on EPA standard for ULSD of 15 ppm.

4 SO2 EF derived from mass balance using liq diesel density 7.1 lb/gal (AP-42), liq diesel MW =188 (TANKS 4.0), MW SO2 =64.06

Attachment G-7: Facility PTE Emissions
Storage Tanks

			Tank Working Capacity		Throughput					EPA TANKS 4.0d VOC Losses				
Tank No.	Tank Type	Product	bbl.	gal	bbl/yr	gal/yr	TVP Method	Standing lb/yr	Working lb/yr	Rim Seal lb/yr	Withdrawal lb/yr	Deck Fitting lb/yr	Deck Seam lb/yr	Total lb/yr
Tank 1	IFR	Gasoline/ Naphtha	306,600	12,877,200	387,022	16,254,939	Gasoline/ Naphtha, RVP = 10.5, Slope 3			2,486	88	3,346	431	**6,351**
Tank 2	IFR	Jet Fuel	302,400	12,700,800	793,000	33,306,000	AP-42, Chapter 7, Table 7.1-2 (Jet Kerosene); TVP= 0.015			8	201	8		**217**
Tank 4	IFR	Diesel	315,000	13,230,000	219,000	9,198,000	AP-42, Chapter 7, Table 7.1-2 (Distillate Fuel Oil No. 2) TVP= 0.012			1	59	3	0	**64**
Tank 4	IFR	Gasoline/ Naphtha	315,000	13,230,000	397,626	16,700,279	Gasoline/ Naphtha, RVP = 10.5, Slope 3			433	85	2,454	288	**3,260**
Tank 9	IFR	Gasoline/ Naphtha	130,200	5,468,400	164,352	6,902,782	Gasoline/ Naphtha RVP = 10.5, Slope 3			1,801	52	2,877	226	**4,955**
AST 1	IFR	Denatured Ethanol/ Diesel	25,400	1,066,800	15,817	664,300	TANKS database; VP equation constants for organic liquids (Denatured Ethanol)			86	12	90		**189**
AST 2	IFR	Denatured Ethanol/ Diesel	25,400	1,066,800	15,817	664,300	TANKS database; VP equation constants for organic liquids (Denatured Ethanol)			86	12	90		**189**
AST 3	IFR	Denatured Ethanol/ Diesel	25,400	1,066,800	15,817	664,300	TANKS database; VP equation constants for organic liquids (Denatured Ethanol)			86	12	90		**189**
AST 4	IFR	Denatured Ethanol/ Diesel	25,400	1,066,800	15,817	664,300	TANKS database; VP equation constants for organic liquids (Denatured Ethanol)			86	12	90		**189**
AST 5	IFR	Denatured Ethanol/ Diesel	25,400	1,066,800	15,817	664,300	TANKS database; VP equation constants for organic liquids (Denatured Ethanol)			86	12	90		**189**
AST 6	IFR	Denatured Ethanol/ Diesel	25,400	1,066,800	15,817	664,300	TANKS database; VP equation constants for organic liquids (Denatured Ethanol)			86	12	90		**189**
					2,055,900	86,347,800	Total, lb/y =	**0**	**0**	**5,246**	**559**	**9,228**	**945**	**15,979**
							Total, tpy =	**0.0**	**0.0**	**2.6**	**0.3**	**4.6**	**0.5**	**8.0**

Notes:

1 Gasoline/ Naphtha throughputs for Tanks 1, 4, and 9 were proportioned based on tank capacities.

2 Tank 4 was modeled for 7 months of Gasoline/ Naphtha service and 5 months of Diesel service (most conservative emission scenario, i.e. PTE)

3 ASTs 1-6 were modeled using denatured ethanol properties (most conservative emission scenario, i.e. PTE)

Attachment G-8: Facility PTE Emissions
GHG Combustion Emissions

Fuel Properties

Fuel	HHV (mmBTU/gal)	CO2 EF (kg/mmBTU)	CH4 EF (kg/mmBTU)	N2O EF (kg/mmBTU)
Propane	0.091	61.46	0.003	0.006
Gasoline	0.125	70.22	0.003	0.006
Diesel	0.138	73.96	0.003	0.006

Fuel Usage

Pollutant	Max Fuel Consumption (gal/hr)	Operating Hours (hrs/yr)	Fuel (gal/yr)
Flare Pilot Gas (Propane)	0.59	2920	1,733
Flare Loading Rack Vapors (Gasoline)	22.44	2920	65,525
Diesel Generator	8.25	4745	39,146

GHG Emissions (Metric Tons)

Fuel	CO2 (MT/yr)	CH4 (MT/yr)	N2O (MT/yr)	CO2e (MT/yr)
Flare Pilot Gas (Propane)	10	0.0	0.0	10
Flare Loading Rack Vapors (Gasoline)	575	0.0	0.0	590
Diesel Generator	400	0.0	0.0	410
Total, metric ton/ yr =	984	0.0	0.1	**1,010**

GHG Emissions (Short Tons)

Fuel	CO2 (tpy)	CH4 (tpy)	N2O (tpy)	CO2e (tpy)
Flare Pilot Gas (Propane)	11	0.0	0.0	11
Flare Loading Rack Vapors (Gasoline)	634	0.0	0.1	651
Diesel Generator	440	0.0	0.0	452
Total, short ton/ yr =	1,085	0.0	0.1	**1,114**

Notes:
1 HHVs and CO2 EFs per Table C-1 of 40 CFR Part 98
2 HHVs and CO2 EFs per Table C-2 of 40 CFR Part 98

Attachment H

TANKS 4.09d Model Output

Kauai Terminal Upgrade Project – Phase I
Application for an Initial Covered Source Permit

Mid Pac Petroleum, LLC
Kauai Petroleum Co., Ltd.
Petroleum Bulk Loading Terminal
Permit No. 0370-01-N

Mid Pac PETROLEUM

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	AST 1
City:	Lihue
State:	Hawaii
Company:	Kauai Petroleum Company, Ltd.
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	12.00
Volume (gallons):	25,400.00
Turnovers:	26.15
Self Supp. Roof? (y/n):	Y
No. of Columns:	0.00
Eff. Col. Diam. (ft):	0.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good
Roof Color/Shade:	Aluminum/Specular
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Vapor-mounted
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	2
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Lihue, Hawaii (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST 1 - Internal Floating Roof Tank
Lihue, Hawaii

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Denatured ethanol/ Diesel	All	81.19	74.86	87.52	76.92	1.3049	N/A	N/A	46.0700			46.07	Option 2: A=8.12187, B=1598.673, C=226.726

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

AST 1 - Internal Floating Roof Tank
Lihue, Hawaii

Annual Emission Calcaulations	
Rim Seal Losses (lb):	86.2224
Seal Factor A (lb-mole/ft-yr):	6.7000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.2000
Value of Vapor Pressure Function:	0.0233

Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.3049
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Withdrawal Losses (lb):	12.3236
Number of Columns:	0.0000
Effective Column Diameter (ft):	0.0000
Annual Net Throughput (gal/yr.):	664,300.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	6.6100
Tank Diameter (ft):	12.0000
Deck Fitting Losses (lb):	90.0831
Value of Vapor Pressure Function:	0.0233
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	84.0000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Total Losses (lb):	188.6291

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1	36.00	5.90	1.20	36.6070
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	15.0138
Roof Leg or Hanger Well/Adjustable	2	7.90	0.00	0.00	16.9442
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	12.8690
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	6.6490

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

AST 1 - Internal Floating Roof Tank
Lihue, Hawaii

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Denatured ethanol/ Diesel	86.22	12.32	90.08	0.00	188.63

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	AST 2
City:	Lihue
State:	Hawaii
Company:	Kauai Petroleum Company, Ltd.
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	12.00
Volume (gallons):	25,400.00
Turnovers:	26.15
Self Supp. Roof? (y/n):	Y
No. of Columns:	0.00
Eff. Col. Diam. (ft):	0.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good
Roof Color/Shade:	Aluminum/Specular
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Vapor-mounted
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	2
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Lihue, Hawaii (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST 2 - Internal Floating Roof Tank
Lihue, Hawaii

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Denatured ethanol/ Diesel	All	81.19	74.86	87.52	76.92	1.3049	N/A	N/A	46.0700			46.07	Option 2: A=8.12187, B=1598.673, C=226.726

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

AST 2 - Internal Floating Roof Tank
Lihue, Hawaii

Annual Emission Calcaulations	
Rim Seal Losses (lb):	86.2224
Seal Factor A (lb-mole/ft-yr):	6.7000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.2000
Value of Vapor Pressure Function:	0.0233
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.3049
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Withdrawal Losses (lb):	12.3236
Number of Columns:	0.0000
Effective Column Diameter (ft):	0.0000
Annual Net Throughput (gal/yr.):	664,300.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	6.6100
Tank Diameter (ft):	12.0000
Deck Fitting Losses (lb):	90.0831
Value of Vapor Pressure Function:	0.0233
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	84.0000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Total Losses (lb):	188.6291

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1	36.00	5.90	1.20	38.6070
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	15.0138
Roof Leg or Hanger Well/Adjustable	2	7.90	0.00	0.00	16.9442
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	12.8690
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	6.6490

TANKS 4.0.9d
Emissions Report - Detail Format

Individual Tank Emission Totals

Emissions Report for: Annual

AST 2 - Internal Floating Roof Tank
Lihue, Hawaii

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Denatured ethanol/ Diesel	86.22	12.32	90.08	0.00	188.63

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	AST 3
City:	Lihue
State:	Hawaii
Company:	Kauai Petroleum Company, Ltd.
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	12.00
Volume (gallons):	25,400.00
Turnovers:	26.15
Self Supp. Roof? (y/n):	Y
No. of Columns:	0.00
Eff. Col. Diam. (ft):	0.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good
Roof Color/Shade:	Aluminum/Specular
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Vapor-mounted
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	2
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Lihue, Hawaii (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST 3 - Internal Floating Roof Tank
Lihue, Hawaii

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Denatured ethanol/ Diesel	All	81.19	74.86	87.52	76.92	1.3049	N/A	N/A	46.0700			46.07	Option 2: A=8.12187, B=1598.673, C=226.726

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

AST 3 - Internal Floating Roof Tank
Lihue, Hawaii

Annual Emission Calculations	
Rim Seal Losses (lb):	86.2224
Seal Factor A (lb-mole/ft-yr):	6.7000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.2000
Value of Vapor Pressure Function:	0.0233
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.3049
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Withdrawal Losses (lb):	12.3236
Number of Columns:	0.0000
Effective Column Diameter (ft):	0.0000
Annual Net Throughput (gal/yr.):	664,300.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	6.6100
Tank Diameter (ft):	12.0000
Deck Fitting Losses (lb):	90.0831
Value of Vapor Pressure Function:	0.0233
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	84.0000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Total Losses (lb):	188.6291

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1	36.00	5.90	1.20	38.6070
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	15.0138
Roof Leg or Hanger Well/Adjustable	2	7.90	0.00	0.00	16.9442
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	12.8690
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	6.6490

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

AST 3 - Internal Floating Roof Tank
Lihue, Hawaii

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Denatured ethanol/ Diesel	86.22	12.32	90.08	0.00	188.63

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	AST 4
City:	Lihue
State:	Hawaii
Company:	Kauai Petroleum Company, Ltd.
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	12.00
Volume (gallons):	25,400.00
Turnovers:	26.15

Self Supp. Roof? (y/n):	Y	
No. of Columns:		0.00
Eff. Col. Diam. (ft):		0.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good
Roof Color/Shade:	Aluminum/Specular
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Vapor-mounted
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	2
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Lihue, Hawaii (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST 4 - Internal Floating Roof Tank
Lihue, Hawaii

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Denatured ethanol/ Diesel	All	81.19	74.86	87.52	76.92	1.3049	N/A	N/A	46.0700			46.07	Option 2: A=8.12187, B=1598.673, C=226.726

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

AST 4 - Internal Floating Roof Tank
Lihue, Hawaii

Annual Emission Calcaulations	
Rim Seal Losses (lb):	86.2224
Seal Factor A (lb-mole/ft-yr):	6.7000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.2000
Value of Vapor Pressure Function:	0.0233
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.3049
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Withdrawal Losses (lb):	12.3236
Number of Columns:	0.0000
Effective Column Diameter (ft):	0.0000
Annual Net Throughput (gal/yr.):	664,300.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	6.6100
Tank Diameter (ft):	12.0000
Deck Fitting Losses (lb):	90.0831
Value of Vapor Pressure Function:	0.0233
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	84.0000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000
Tank Diameter (ft):	12.0000

Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000

Total Losses (lb): 188.6291

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1	36.00	5.90	1.20	38.6070
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	15.0138
Roof Leg or Hanger Well/Adjustable	2	7.90	0.00	0.00	16.9442
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	12.8690
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	6.6490

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

AST 4 - Internal Floating Roof Tank
Lihue, Hawaii

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Denatured ethanol/ Diesel	86.22	12.32	90.08	0.00	188.63

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	AST 5
City:	Lihue
State:	Hawaii
Company:	Kauai Petroleum Company, Ltd.
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	12.00
Volume (gallons):	25,400.00
Turnovers:	26.15
Self Supp. Roof? (y/n):	Y
No. of Columns:	0.00
Eff. Col. Diam. (ft):	0.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good
Roof Color/Shade:	Aluminum/Specular
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Vapor-mounted
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	2
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Lihue, Hawaii (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d

Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST 5 - Internal Floating Roof Tank
Lihue, Hawaii

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Denatured ethanol/ Diesel	All	81.19	74.86	87.52	76.92	1.3049	N/A	N/A	46.0700			46.07	Option 2: A=8.12187, B=1598.673, C=226.726

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

AST 5 - Internal Floating Roof Tank
Lihue, Hawaii

Annual Emission Calcaulations	
Rim Seal Losses (lb):	86.2224
Seal Factor A (lb-mole/ft-yr):	6.7000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.2000
Value of Vapor Pressure Function:	0.0233
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.3049
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Withdrawal Losses (lb):	12.3236
Number of Columns:	0.0000
Effective Column Diameter (ft):	0.0000
Annual Net Throughput (gal/yr.):	664,300.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	6.6100
Tank Diameter (ft):	12.0000
Deck Fitting Losses (lb):	90.0831
Value of Vapor Pressure Function:	0.0233
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	84.0000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Total Losses (lb):	188.6291

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1	36.00	5.90	1.20	38.6070
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	15.0138
Roof Leg or Hanger Well/Adjustable	2	7.90	0.00	0.00	16.9442
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	12.8590
Vacuum Breaker (10-in. Diam.)/Weighted Mech Actuation, Gask.	1	6.20	1.20	0.94	6.6490

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

AST 5 - Internal Floating Roof Tank
Lihue, Hawaii

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Denatured ethanol/ Diesel	86.22	12.32	90.08	0.00	188.63

TANKS 4.0.9d
Emissions Report - Detail Format

Tank Indentification and Physical Characteristics

Identification

User Identification:	AST 6
City:	Lihue
State:	Hawaii
Company:	Kauai Petroleum Company, Ltd.
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	12.00
Volume (gallons):	25,400.00
Turnovers:	26.15
Self Supp. Roof? (y/n):	Y
No. of Columns:	0.00
Eff. Col. Diam. (ft):	0.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good
Roof Color/Shade:	Aluminum/Specular
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Vapor-mounted
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	2
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Lihue, Hawaii (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

AST 6 - Internal Floating Roof Tank
Lihue, Hawaii

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Denatured ethanol/ Diesel	All	81.19	74.86	87.52	76.92	1.3049	N/A	N/A	46.0700			46.07	Option 2: A=8.12187, B=1598.673, C=226.726

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

AST 6 - Internal Floating Roof Tank
Lihue, Hawaii

Annual Emission Calcaulations	
Rim Seal Losses (lb):	86.2224
Seal Factor A (lb-mole/ft-yr):	6.7000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.2000
Value of Vapor Pressure Function:	0.0233
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	1.3049
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000

Withdrawal Losses (lb):	12.3236
Number of Columns:	0.0000
Effective Column Diameter (ft):	0.0000
Annual Net Throughput (gal/yr.):	664,300.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	6.6100
Tank Diameter (ft):	12.0000
Deck Fitting Losses (lb):	90.0831
Value of Vapor Pressure Function:	0.0233
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	84.0000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000
Tank Diameter (ft):	12.0000
Vapor Molecular Weight (lb/lb-mole):	46.0700
Product Factor:	1.0000
Total Losses (lb):	188.6291

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1	36.00	5.90	1.20	38.6070
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	15.0138
Roof Leg or Hanger Well/Adjustable	2	7.90	0.00	0.00	16.9442
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	12.8690
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	6.6490

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

AST 6 - Internal Floating Roof Tank
Lihue, Hawaii

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Denatured ethanol/ Diesel	86.22	12.32	90.08	0.00	188.63

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 1
City:	Lihue
State:	Hawaii
Company:	Kauai Petroleum Company, Ltd.
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	35.90
Volume (gallons):	306,600.00
Turnovers:	53.02
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Bolted

Construction:	Sheet
Deck Seam:	Sheet: 5 Ft Wide
Deck Seam Len. (ft):	202.45

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Unbolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	12
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Stub Drain (1-in. Diameter)/Slit Fabric Seal 10% Open	11
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Lihue, Hawaii (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 1 - Internal Floating Roof Tank
Lihue, Hawaii

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Kauai Gasoline/ Naphtha	All	77.71	73.81	81.61	75.60	7.6149	N/A	N/A	66.0000			92.00	Option 4: RVP=10.5, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 1 - Internal Floating Roof Tank
Lihue, Hawaii

Annual Emission Calcaulations	
Rim Seal Losses (lb):	2,486.3715
Seal Factor A (lb-mole/ft-yr):	5.8000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.3000
Value of Vapor Pressure Function:	0.1809
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6149
Tank Diameter (ft):	35.9000
Vapor Molecular Weight (lb/lb-mole):	66.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	87.7737
Number of Columns:	1.0000
Effective Column Diameter (ft):	1.0000
Annual Net Throughput (gal/yr.):	16,254,939.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	5.6000
Tank Diameter (ft):	35.9000
Deck Fitting Losses (lb):	3,345.8904
Value of Vapor Pressure Function:	0.1809
Vapor Molecular Weight (lb/lb-mole):	66.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	280.2000
Deck Seam Losses (lb):	430.9232
Deck Seam Length (ft):	202.4500
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.1400
Deck Seam Length Factor(ft/sqft):	0.2000
Tank Diameter (ft):	35.9000
Vapor Molecular Weight (lb/lb-mole):	66.0000
Product Factor:	1.0000
Total Losses (lb):	6,350.9588

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Unbolted Cover, Gasketed	1	31.00	5.20	1.30	370.1735
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	167.1751
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	394.0556
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1	76.00	0.00	0.00	907.5220
Roof Leg or Hanger Well/Adjustable	12	7.90	0.00	0.00	1,132.0143
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	143.2930
Stub Drain (1-in. Diameter)/	11	1.20	0.00	0.00	157.6222
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	74.0347

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 1 - Internal Floating Roof Tank
Lihue, Hawaii

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Kauai Gasoline/ Naphtha	2,486.37	87.77	3,345.89	430.92	6,350.96

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 2
City:	Lihue
State:	Hawaii
Company:	Kauai Petroleum Company, Ltd.
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	40.00
Volume (gallons):	302,400.00
Turnovers:	110.14
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Vapor-mounted
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Unbolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	6
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float	1

Meterological Data used in Emissions Calculations: Lihue, Hawaii (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 2 - Internal Floating Roof Tank
Lihue, Hawaii

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Jet kerosene	All	77.71	73.81	81.61	75.60	0.0141	N/A	N/A	130.0000			162.00	Option 1: VP70 = .011 VP80 = .015

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 2 - Internal Floating Roof Tank
Lihue, Hawaii

Annual Emission Calcaulations	
Rim Seal Losses (lb):	8.3633
Seal Factor A (lb-mole/ft-yr):	6.7000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.2000
Value of Vapor Pressure Function:	0.0002
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0141
Tank Diameter (ft):	40.0000
Vapor Molecular Weight (lb/lb-mole):	130.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	201.2047
Number of Columns:	1.0000
Effective Column Diameter (ft):	1.0000
Annual Net Throughput (gal/yr.):	33,306,000.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	7.0000
Tank Diameter (ft):	40.0000
Deck Fitting Losses (lb):	7.8203
Value of Vapor Pressure Function:	0.0002
Vapor Molecular Weight (lb/lb-mole):	130.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	250.6000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor(ft/sqft):	0.0000
Tank Diameter (ft):	40.0000
Vapor Molecular Weight (lb/lb-mole):	130.0000
Product Factor:	1.0000
Total Losses (lb):	217.3883

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Unbolted Cover, Gasketed	1	31.00	5.20	1.30	0.9674
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	0.4369
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	1.0298
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1	76.00	0.00	0.00	2.3717
Roof Leg or Hanger Well/Adjustable	6	7.90	0.00	0.00	1.4792
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	0.3745
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	0.1935
Slotted Guide-Pole/Sample Well/Gask. Sliding Cover, w. Float	1	31.00	36.00	2.00	0.9674

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 2 - Internal Floating Roof Tank
Lihue, Hawaii

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Jet kerosene	8.36	201.20	7.82	0.00	217.39

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 4
City:	Lihue
State:	Hawaii

Company:	Kauai Petroleum Company, Ltd.
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	38.00
Volume (gallons):	315,000.00
Turnovers:	82.22
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Liquid-mounted
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail
Deck Type:	Bolted
Construction:	Sheet
Deck Seam:	Sheet: 5 Ft Wide
Deck Seam Len. (ft):	226.82

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Unbolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	20
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Stub Drain (1-in. Diameter)/Slit Fabric Seal 10% Open	12
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meterological Data used in Emissions Calculations: Lihue, Hawaii (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 4 - Internal Floating Roof Tank
Lihue, Hawaii

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	Jan	75.41	71.75	79.07	75.60	0.0106	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Feb	75.69	71.71	79.67	75.60	0.0107	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Mar	76.40	72.47	80.32	75.60	0.0109	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	Apr	77.16	73.17	81.15	75.60	0.0111	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Distillate fuel oil no. 2	May	78.17	73.99	82.36	75.60	0.0115	N/A	N/A	130.0000			188.00	Option 1: VP70 = .009 VP80 = .012
Kauai Gasoline/ Naphtha	Jun	79.15	74.95	83.35	75.60	7.8153	N/A	N/A	66.0000			92.00	Option 4: RVP=10.5, ASTM Slope=3
Kauai Gasoline/ Naphtha	Jul	79.61	75.47	83.75	75.60	7.8792	N/A	N/A	66.0000			92.00	Option 4: RVP=10.5, ASTM Slope=3
Kauai Gasoline/ Naphtha	Aug	79.84	75.70	83.98	75.60	7.9117	N/A	N/A	66.0000			92.00	Option 4: RVP=10.5, ASTM Slope=3
Kauai Gasoline/ Naphtha	Sep	79.57	75.40	83.73	75.60	7.8730	N/A	N/A	66.0000			92.00	Option 4: RVP=10.5, ASTM Slope=3
Kauai Gasoline/ Naphtha	Oct	78.47	74.69	82.25	75.60	7.7197	N/A	N/A	66.0000			92.00	Option 4: RVP=10.5, ASTM Slope=3
Kauai Gasoline/ Naphtha	Nov	77.16	73.87	80.44	75.60	7.5393	N/A	N/A	66.0000			92.00	Option 4: RVP=10.5, ASTM Slope=3
Kauai Gasoline/ Naphtha	Dec	75.87	72.49	79.24	75.60	7.3656	N/A	N/A	66.0000			92.00	Option 4: RVP=10.5, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 4 - Internal Floating Roof Tank
Lihue, Hawaii

Month:	January	February	March	April	May	June	July	August	September	October	November	December
Rim Seal Losses (lb):	0.1193	0.1202	0.1226	0.1252	0.1286	62.8270	63.5817	63.9688	63.5085	61.7104	59.6404	57.6908
Seal Factor A (lb-mole/ft-yr):	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000	1.6000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000	0.3000
Value of Vapor Pressure Function:	0.0002	0.0002	0.0002	0.0002	0.0002	0.1879	0.1901	0.1913	0.1899	0.1845	0.1784	0.1725
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.0106	0.0107	0.0109	0.0111	0.0115	7.8153	7.8792	7.9117	7.8730	7.7197	7.5393	7.3656
Tank Diameter (ft):	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Withdrawal Losses (lb):	11.8804	11.8804	11.8804	11.8804	11.8804	12.1525	12.1525	12.1525	12.1525	12.1525	12.1525	12.1525
Number of Columns:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Effective Column Diameter (ft):	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Net Throughput (gal/mo.):	1,839,600.0000	1,839,600.0000	1,839,600.0000	1,839,600.0000	1,839,600.0000	2,385,754.1900	2,385,754.1900	2,385,754.1900	2,385,754.1900	2,385,754.1900	2,385,754.1900	2,385,754.1900
Shell Clingage Factor (bbl/1000 sqft):	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015	0.0015
Average Organic Liquid Density (lb/gal):	7.1000	7.1000	7.1000	7.1000	7.1000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000	5.6000
Tank Diameter (ft):	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000
Deck Fitting Losses (lb):	0.6759	0.6813	0.6947	0.7094	0.7287	356.0883	360.3659	362.5599	359.9512	349.7600	338.0277	326.9779
Value of Vapor Pressure Function:	0.0002	0.0002	0.0002	0.0002	0.0002	0.1879	0.1901	0.1913	0.1899	0.1845	0.1784	0.1725
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	344.6000	344.6000	344.6000	344.6000	344.6000	344.6000	344.6000	344.6000	344.6000	344.6000	344.6000	344.6000
Deck Seam Losses (lb):	0.0793	0.0799	0.0815	0.0832	0.0855	41.7794	42.2813	42.5387	42.2326	41.0369	39.6604	38.3639
Deck Seam Length (ft):	226.8200	226.8200	226.8200	226.8200	226.8200	226.8200	226.8200	226.8200	226.8200	226.8200	226.8200	226.8200
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.1400	0.1400	0.1400	0.1400	0.1400	0.1400	0.1400	0.1400	0.1400	0.1400	0.1400	0.1400
Deck Seam Length Factor(ft/sqft):	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000	0.2000
Tank Diameter (ft):	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000	38.0000
Vapor Molecular Weight (lb/lb-mole):	130.0000	130.0000	130.0000	130.0000	130.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000	66.0000
Product Factor:	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total Losses (lb):	12.7549	12.7618	12.7793	12.7982	12.8232	472.8472	478.3814	481.2199	477.8448	464.6599	449.4810	435.1851

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Unbolted Cover, Gasketed	1	31.00	5.20	1.30	222.1638
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	100.3320
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	236.4969
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1	76.00	0.00	0.00	544.6595
Roof Leg or Hanger Well/Adjustable	20	7.90	0.00	0.00	1,132.3185
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	85.9989
Stub Drain (1-in. Diameter)/	12	1.20	0.00	0.00	103.1986
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	44.4328

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 4 - Internal Floating Roof Tank
Lihue, Hawaii

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Distillate fuel oil no. 2	0.62	59.40	3.49	0.41	63.92
Kauai Gasoline/ Naphtha	432.93	85.07	2,453.73	287.89	3,259.62

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	Tank 9
City:	Lihue
State:	Hawaii
Company:	Kauai Petroleum Company, Ltd.
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):	26.00
Volume (gallons):	130,200.00
Turnovers:	53.02
Self Supp. Roof? (y/n):	N
No. of Columns:	1.00
Eff. Col. Diam. (ft):	1.00

Paint Characteristics

Internal Shell Condition:	Light Rust

Product Factor: 1.0000

Total Losses (lb): 4,955.3481

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors KFa(lb-mole/yr)	KFb(lb-mole/(yr mph^n))	m	Losses(lb)
Access Hatch (24-in. Diam.)/Unbolted Cover, Gasketed	1	31.00	5.20	1.30	370.1735
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	167.1751
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1	33.00	0.00	0.00	394.0556
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1	76.00	0.00	0.00	907.5220
Roof Leg or Hanger Well/Adjustable	7	7.90	0.00	0.00	660.3417
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1	12.00	0.00	0.00	143.2930
Stub Drain (1-in. Diameter)/	6	1.20	0.00	0.00	85.9758
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	148.0694

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

Tank 9 - Internal Floating Roof Tank
Lihue, Hawaii

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Kauai Gasoline/ Naphtha	1,800.71	52.00	2,876.61	226.03	4,955.35

TANKS 4.0.9d
Emissions Report - Detail Format
Total Emissions Summaries - All Tanks in Report

Emissions Report for: Annual

Tank Identification				Losses (lbs)
AST 1	Kauai Petroleum Company, Ltd.	Internal Floating Roof Tank	Lihue, Hawaii	188.63
AST 2	Kauai Petroleum Company, Ltd.	Internal Floating Roof Tank	Lihue, Hawaii	188.63
AST 3	Kauai Petroleum Company, Ltd.	Internal Floating Roof Tank	Lihue, Hawaii	188.63
AST 4	Kauai Petroleum Company, Ltd.	Internal Floating Roof Tank	Lihue, Hawaii	188.63
AST 5	Kauai Petroleum Company, Ltd.	Internal Floating Roof Tank	Lihue, Hawaii	188.63
AST 6	Kauai Petroleum Company, Ltd.	Internal Floating Roof Tank	Lihue, Hawaii	188.63
Tank 1	Kauai Petroleum Company, Ltd.	Internal Floating Roof Tank	Lihue, Hawaii	6,350.96
Tank 2	Kauai Petroleum Company, Ltd.	Internal Floating Roof Tank	Lihue, Hawaii	217.39
Tank 4	Kauai Petroleum Company, Ltd.	Internal Floating Roof Tank	Lihue, Hawaii	3,323.54
Tank 9	Kauai Petroleum Company, Ltd.	Internal Floating Roof Tank	Lihue, Hawaii	4,955.35
Total Emissions for all Tanks:				15,979.01

Shell Color/Shade:	White/White
Shell Condition	Good
Roof Color/Shade:	White/White
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Mechanical Shoe
Secondary Seal	None

Deck Characteristics

Deck Fitting Category:	Detail	
Deck Type:	Bolted	
Construction:	Sheet	
Deck Seam:	Sheet: 5 Ft Wide	
Deck Seam Len. (ft):		106.19

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam.)/Unbolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Column Well (24-in. Diam.)/Built-Up Col.-Sliding Cover, Gask.	1
Ladder Well (36-in. Diam.)/Sliding Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	7
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Stub Drain (1-in. Diameter)/Slit Fabric Seal 10% Open	6
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2

Meterological Data used in Emissions Calculations: Lihue, Hawaii (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Tank 9 - Internal Floating Roof Tank
Lihue, Hawaii

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Kauai Gasoline/ Naphtha	All	77.71	73.81	81.61	75.60	7.6149	N/A	N/A	66.0000			92.00	Option 4: RVP=10.5, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

Tank 9 - Internal Floating Roof Tank
Lihue, Hawaii

Annual Emission Calcaulations	
Rim Seal Losses (lb):	1,800.7147
Seal Factor A (lb-mole/ft-yr):	5.8000
Seal Factor B (lb-mole/ft-yr (mph)^n):	0.3000
Value of Vapor Pressure Function:	0.1809
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	7.6149
Tank Diameter (ft):	26.0000
Vapor Molecular Weight (lb/lb-mole):	66.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	51.9976
Number of Columns:	1.0000
Effective Column Diameter (ft):	1.0000
Annual Net Throughput (gal/yr.):	6,902,782.0000
Shell Clingage Factor (bbl/1000 sqft):	0.0015
Average Organic Liquid Density (lb/gal):	5.6000
Tank Diameter (ft):	26.0000
Deck Fitting Losses (lb):	2,876.6060
Value of Vapor Pressure Function:	0.1809
Vapor Molecular Weight (lb/lb-mole):	66.0000
Product Factor:	1.0000
Tot. Roof Fitting Loss Fact.(lb-mole/yr):	240.9000
Deck Seam Losses (lb):	226.0298
Deck Seam Length (ft):	106.1900
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.1400
Deck Seam Length Factor(ft/sqft):	0.2000
Tank Diameter (ft):	26.0000
Vapor Molecular Weight (lb/lb-mole):	66.0000